

The Economic Nature of the Forestry.

CONTENTS

Preface	101
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Part I. Some Problems of Japanese Forestry

Introduction	103
Chapter 1. Profits of forestry	103
Chapter 2. Yoshino forestry	104
Chapter 3. Nature of forestry	105
Chapter 4. The size of forestry	106
Chapter 5. Economic location	107
Chapter 6. Profit and loss in forestry	109
Chapter 7. The form of forestry recomendable in mountain villages....	111

Part II. Form of the Forest Business Management

Chapter 1. Introduction	115
Chapter 2. Economic forms of the forestry management	118
I. The historical changes of the economic forms	118
II. The classification of the management by its economical purpose	124
Chapter 3. The enterprise forms of the forestry management	131
I. Forestry management and enterprise	131
II. General classification of the enterprise forms	132
III. Independent private enterprise	133
IV. Group private enterprise	134
V. Minority-group private enterprise	134
VI. The corporation	136
VII. The cooperative	138
VIII. Public enterprise	141
IX. The public and private corporate enterprise	147

Chapter 4. The various forms based on the subsidiary nature of the forestry management	147
I. The foundation of the classification	147
II. The classification by the kind of the products	149
III. The classification by the disposing means of the forest products	151
IV. The classification by the purpose of the forest land	153
V. The classification by the production techniques	154
VI. The classification by the combination of the production goods.....	157
VII. The classification by the relation of the administrative function with the management control	159
VIII. The classification by the continuity of the production....	162

Part III. A Study on the Forestry Economic Location

Chapter 1. Economic location and production intensity	165
Chapter 2. Economic location and land rent	168
Chapter 3. The location of forestry	170
I. The district of the agricultural forest	170
II. The district of the economical forest	171
III. The district of the natural forest.....	174
IV. The district of the unused forest.....	174

Preface

This work contains my three studies. In Part I, I referred especially to the private forest owners about the necessary problems on their forest management. Part II is the translation of selected chapters of "The Form of Forest Management" which was published on the 10th of February 1956 as the bulletin of the Forestry Agency of Japan. Part I has no relation to Part II directly, but the former comments on the essentials of the latter. Accordingly, when Part I is reviewed, then it will be easy to understand the contents of Part II. In Part II, I have eliminated Chapter 5 "The classification based on the scale and the location of the forestry management", but its essences are stated in Chapter 4 and 5 of the Part I. Part III is the Résumé of my study on the location of forestry production.

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Part I

Some Problems of Japanese Forestry

Introduction

This theme is very vague and can be taken up in any way according to the way of thinking. For instance, the one way is to explain the present situation of the Japanese forestry and then discuss the policy about it. The other is to pick up any or important problems and discuss them.

In this book, the author takes the latter, so as some problems that the reader may not be able to find items of special interest will be chosen. However, the content will be of benefit to those concerned with forest industry, administration and instruction who are devoting their efforts to make the forest useful for their economy or to finance effectively, and consequently to develop the forest industry.

Through the study of such fundamental problems, the author believes that the forestry of Japan can be re-considered from a new angle. These problems, however, are said to be derived from the present situation of the Japanese forestry.

Chapter I. Profits of Forestry

Those who own the forest and manage it are required to study the general nature of forestry.

The so-called enterprise has not developed much in forestry, because of low profit. It may be due to the fact that the duration of production is too long, and by calculating at compound interest, the expense amounts to high. On the other hand, the profit, if compared with the anticipated returns based on the present price, is too small. However, as stated later, the profit is not always small. The number of corporation owned forest is yet few, because the area of each private forest is too small in size for transaction and only few owners are willing to sell their properties. This fact invites little possibility of efficient management and resultant low profit.

Although such calculated profit is small, there are still benefits obtained from ownership and management of forest as follows.

1. Forest is, in itself, a productive source, which, beside its annual growth and yielding of by-products and fuel, the stumpage over a given diameter has a present value changeable in line with the market price, and does not depreciate as in case of other fixed property but increases its value in general. Moreover, when they are sold, the marketing season is not limited as agricultural crops, and can be sold in increased amount if the owner needs cash or when the price of timber is on the rise.
2. Although the revenue from a small woodlot if compared with a large one is small, under the intelligent management, it will not fail to yield profits except under fatal depression. Moreover, the management is simple and pleasant and the planting job can be fairly done by family labour. Also payment can be

postponed to some extent under inevitable circumstance. Therefore, much labour problem will not be experienced as in other industries.

3. As in case of real estate, a forest is also a promising property to hold. It is something like a saving corresponding to the sales, but it is better than sales because it is not affected by fall in monetary value as deposit or insurance. We can obtain some by-products and various games from forest and also it affords us recreational value. Anticipation of increase in value, and planning for descendents will give the owner a broad mind and new energy for tomorrow's activity.

Because of all these benefits, the forest owner is seldom willing to sell it. However, to leave a unstocked land will only yield a small part of its real value. Forest land can be changed to the land which yields considerable profit—and pleasure—depending upon how to manage it. And the more the forest land in Japan is managed in this manner, the more the forest products to the benefit of the Japanese economy.

If the local forestry is well developed, what pattern does it take? Yoshino Forestry represents one instance.

Chapter 2. Yoshino Forestry

Recently, many prefectural governments are now trying to introduce their own famous forest districts to attract many people. The writer has visited and studied them.

Of many characteristics of Yoshino Forestry, the direct contribution to its product of good quality timber is credited to the intensive working method started from mixed plantation of 10,000 sugi (*Cryptomeria japonica*) and hinoki (Japanese cypress—*Chamaecyparis obtusa*) per ha., Silvicultural practice now conducting there is as follows.

Seeds are taken from mother-trees with 50—80 years old late summer. The seeds are selected through water, and sowed in seed-bed per 3 go (0.54 litre) per one tsubo (about 40 square feet) and after two transplantings seedlings are sent to the forest land. As the mother-trees are carefully selected, the quality of seeds and seedlings are generally excellent. The land suitable for plantation should be rich in ground water and limestones. Where shear grasses (*Miscanthus sinensis*) grow are the best. The planting ratio of sugi and hinoki is decided according to the soil type and transportation facilities. The ratio is generally 20—30% for hinoki and 70—80% for Sugi, but on poor land near the ridge or open land, more hinoki are planted.

Where transportation facilities are favored, the trees are planted densely to obtain straight and knotless timbers, to produce small logs and to form matured stand quickly. And all these practices aim to increase profit and save expenses. The number of trees planted densely is 10,000 to 12,000 per ha. and 5,000 to 6,000 at the least. Because of the dense and one stroke planting, one man can plant 400 to 600 seedlings in one day. Long and big seedlings are used for aid to planting. Tending and weeding are made once in a year of planting, once a year for 2—4 years and once between the 5th and 6th year. After 10—12 years, branches 1.5 meters from the ground are cut off in spring and autumn. After another 3 years when the trees

have grown closely, salvage cutting is done. In this period, dead branches are taken off by a stick with 2 meters long.

Where transportation is facilitated, the first thinning is made after 10—14 years, which also serves as improvement cutting. Of these logs, some good timbers are marketable. One weak thinning is done once in 5—10 years thereafter. Wolf trees or suppressed trees in stands are almost cut down. In 35 years after planting, thinnings are carried out 5—7 years interval leaving 1,500 to 1,800 trees per *ha*. After 35 years, thinnings are carried out once every 7—10 years. At 60th year 700—800 trees are left which are lessened to 450—500 trees at 80th year per *ha*. However, such matured trees are seldom found recently. There are forests having stumpage of nearly 1,000 m^3 per *ha*. at 60th year, but generally, owing to over cutting during the War, the cutting age has fallen to 40—60 years, and the average annual increment is said to be about 6 m^3 per *ha*.

This average annual increment—6 m^3 —is found in any Japanese sugi stand, but the problem is whether the stand can produce good quality timber with equal annual rings, which can be sold at high price. Therefore, more labours and expenses are required for during the growing period, but still it is paid for.

The above is an example of a representative forestry practice, but the same method is not applied throughout the vast Yoshino district. As a whole, as the production and transaction of forest products have become fairly well organized, ie. the Yamamori (forest watch out man) system has made the management of forest convenient and the labourers have been well trained; the forestry has become to be easily handled. However, the way of production varies with the purpose of the forest owner, management scale and traffic facilities to the woods.

Therefore, it is necessary to get some idea of this particular forestry.

Chapter 3. Nature of Forestry

The nature of forestry varies with the locality, history and ownership. Accordingly the technique applied also varies. For example, "In Europe the need for forest conservation arose several centuries ago. All the land (including the forest land) in Germany, Sweden, or France are scarcer and labour there is cheaper. The available capital have not been abundant. As a result, it became profitable to invest in forest management much earlier in the old World than in the New. The technical lessons learned from European experience prove of great value, but the European methods can not be introduced to the newer areas where the cost low and the labour high." (J. Russell Whitaker: Introductory Economic Geography 1956) History of Japanese forestry is as old as that of Europe, and the forest land is scarcer and labour is cheaper now.

Years ago, wood for fuel and construction was self supplied, but at the present, more owners invest in forestry to get the maximum returns. Nevertheless, there are many differences in the forestry management by owners. This is because of the economical purpose of owners. For instance the production purpose, consequently the production method differs by the ownership such as the national, public, cooperative, corporation and private forests.

Corporation forest seeks for more profit, based on capital calculation and profit and

loss calculation, it will try to save the expenses and increase the income. Therefore, his transaction is active and where the profit is large, he sells often the land and shorten the cutting age.

The management of national forests aims at the development of the national economy, and no special consideration of profit is paid and the needed production is made with the minimum expense. In other words, the corporation forest is managed on the greater profit basis while the national forests are managed on the basis of compensation of the expense. The same is with the public forest.

In case of the forestowners' association, while the product is marketed on profit basis, the profit is neglected when it is sold among membership. This is the case with distribution of seedlings, use of forest road, consignment, trust, proxy, etc., which are entirely on cost basis.

Private forest has various methods of production which can generally be classified as follows:

1. To produce what is needed for own use. Only required volume is harvested with less expense. Not much care is paid to more production or better growth.
2. To conserve the forest for emergency. The income is usually not expected except in emergency. Many small forest owners follow this practice.
3. To operate forestry to supplement the daily need of the family with its returns. This is usual in medium and small forest ownership where the forestry is active. In order to get more income, care is paid to the management and the price trend. The difference from the corporation forest lies in that the private forests aims to increase gross profit, while the company forest aims to increase net profit.

Thus, by the character of the owner and its purpose, the method of production differs. The difference between national forests and private forests in Yoshino district is as follows:

Generally, the national forest is controlled by the national budget and by many staff and labourers, so all the work is likely to be standardized and systematized. For example, the standard of planting is 3,000 sugi and 4,500 hinoki per 1 ha over the country. However, where sugi and hinoki can grow, 5,000 or 10,000 seedlings can grow, if proper tending and improvement are done. At Yoshino, the people keeping such points in mind, they repeat thinnings and sell good-quality timbers, and the income increases more than the expense. In consequence, the owners can increase their incomes.

In national or public forests, the number of trees grown cannot be immediately increased however the land may be wide, because of the budget. The expenditure is limited by the revenue. On the other hand, the private forest is limited in size, and is natural that this limited area is efficiently used. So far as the family economy permits and its labour is abundant, it is very effective to manage the forest properly to increase future income.

Chapter 4. The Size of Forestry

In the private forest, there are, according to the size of forest management, differences in the production method, etc. In other words, there are good and bad

points according to the size of forestry.

The followings are the benefit of the large size management :

1. Technical points....Roads can be properly constructed, trucks and machines can be used and the experts manage the woodland. The expenses, eventually, will be less against the more revenue. Also, when the growing stock is increased, the planting expense may be less with longer rotation.
2. Commercial points....Generally, the owners are under favorable condition in selling products, hiring labour, and buying seeds, seedlings and equipments.
3. Financial points....Because of the confidence, it is easier to get loan at a fairly low interest. Therefore, chances can be fully utilized and the revenue increased, while the land and the forest can be bought at a reasonable price.
4. Others....It has benefits of use of construction of public road, various associations, to getting subsidy and to expand its market.

These are not only the benefits of large size management, but also in small size for production, as in the agriculture.

1. In a small forestry, family labour can be used which, if the skill is equal, would be better than the employed labour. Namely, it can meet the change of local situation and increase the productivity of the land and the income to such an extent that the large management cannot attain.
2. Such a small forestry can be found in localities favored with transportation. In large management, wages must be paid, and the number of labourers will be limited as a result. Thus the productivity of labour may increase but that of land may decrease to some extent. On the other hand, small size management will use family labour, and the productivity will be vise-versa and can stand higher cost of land.
3. Small forestry is mostly combined with agriculture, and such combined system, if compared with agriculture only, will increase income and make the management easy.

Therefore, whether the size of forestry is large or small, there are ways to the highest yield. Even in Yoshino, large owners use their capital efficiently while small owners are carrying on intensive management with their family labour.

Chapter 5. Economic Location

The management and operations of the forestry depend upon the distance to towns and to the market. The town had been self supporting area of forest products as the market and is related with on the amount of expenses used for forest production and supply of labour. The nature of the forest products market and its distance to forest are relevant to the stumpage price. The population of town, characteristic of its industries, and relation of the forestry with its market will change from time to time. But in any case, the social, economical and political actions on local forestry differ with the locality of the forest, and hence the forest management near the village and that in remote area are different.

These forms can be roughly classified as farm forest, commercial forest, natural forest and inaccessible forest.

1. Farm Forest.

Forestry has been carried on for many years in this farm forest zone and as the land ownership changed having close relation to the local farmers and the trade has been going on for a long time, there are many private forests in small plot scattered around.

The forest products are used for self supply or sold, and the labour is available any time, which is included in agriculture. The repeated utilization of forest land often causes decline of land productivity. Under better labour condition, the production period is generally short. Therefore, forests producing many by-products and fuelwood forests are found generally. In case of fuelwood forest or rich owners the management is somewhat extensive. However, the object of management is generally to harvest abundantly in short period, and therefore much labour or sometimes fertilization is applied.

Saw timber forests are also found but the rotation is generally short, and to increase labour efficiently, the various combination of fuel and saw timber production are carried on and operations are intensive. Intensive selective cuttings are also practiced.

2. Commercial Forest.

Forestry here is carried on commercial basis. It is grouped into a) district near farm forest, where labour is easily available and b) district where reliance on capital is relatively greater than on labour.

a) Labour Utilizing District

Each lot of the area is slightly larger. The difference with farm forest is that labour is not always available. Labour is put in when the farm season is off, and therefore, cultivation of trees for special purpose and intercrop requiring lots of labour and fertilizers cannot be carried on. On the other hand, the operation on stand basis production by putting in required labour in a lump is easy to undertake, such as saw timber and fuel wood. The transportation is generally favored, and small diameter trees are in demand, which makes planting and silviculture easy, and promotes the intensification of labour and the frequency of harvesting. In saw timber forest, sugi, pine, hinoki, larch grow in large area, and patch clear-cutting and low final age is frequent. In fuelwood-forest, charcoal production as a part time work for farmers is conducted now and then, and coppice intensive selective cutting is also done.

b) Capital Utilizing District

This district is on the outskirts of labour utilizing district. As the transportation distance is longer, the wage is higher, and fewer labour requires for higher production.

Each lot of the area is larger, and the number of private small forest becomes fewer. Private forest in medium and large size, corporation forest, national or public forests are found. Although the land is vast and productive, as the timber price is low, the method of systematic management on large areas is applied.

Construction timber having relatively long cuttings age is the major product. Because of higher wages for the extensive labour, the comparatively simple and extensive work is systematically carried on to save expenses. Therefore, the simple clear-cutting system and afforestation on large area is the usual case. However, as

cares are not paid enough, natural trees grow in between. Fuelwoods are also found, but the cutting age is longer and the cut area is left as it is.

This district is a promising tract. Even if the present timber price and profit are low, the plantations hereafter will bring good price, as it is anticipated that the transportation cost will be cheaper in the future. If a large amount of capital is invested in this district, the future the forestry will become very profitable.

3. Natural Forest.

The transportation is poorer than capital utilizing district and although cutting is carried out, but reforestation is not paid for. Most of them are national or public forests based on the cost compensation principle. To increase efficiency of capital, temporary felling of large area is economical, but as such district is located near the top of mountain ridges, the forest function as a national land safeguard is important, and profits are sometimes neglected.

4. Inaccessible Forest

There are no forest roads and most of them inaccessible national forest. Historically, owing to the increased demand of forest products and development of transportation, commercial forest district is gradually being extended, and inaccessible natural forest is gradually on the decrease.

Chapter 6. Profit and Loss in Forestry

As stated in the above, forestry can take any form according to the nature of the owner, size of management and economic location. The owner can increase the products and proceeds by the working plan suitable to their own land.

Now, how can the profit and loss in forestry accounted? There may be many methods of accounting but the point is that it should contribute to planting, silviculture and rotation.

Table 1. Productive Index (1 hectar)

Age of Stand	Cost of Production		Proceeds		Average Increment	Yield Per Labourer	Cost of Pr. per Koku	Profit (dis-counted Value)	Margi-nal Efficiency of Capital	
	Num-ber of Labour	Cost of Pr.	Yield	Proceeds						
	(Person)	(1,000 Yen)	(Koku)	(1,000 Yen)	(Koku)	(Koku)	(Yen)	(1,000 Yen)	(%)	
A	20	310	266.3	400	640	20.0	1.3	666	141.2	9.5
	30	330	452.8	690	1,351	23.0	2.1	656	207.8	8.5
	40	350	756.2	910	2,002	22.8	2.6	831	177.0	7.5
	50	370	1,251.5	1,060	2,705	21.2	2.9	1,181	126.9	6.5
B	20	270	235.1	280	280	14.0	1.0	840	16.8	6.0
	30	290	402.0	648	901	21.6	2.2	620	115.5	7.5
	40	310	673.5	1,228	2,059	30.7	4.0	548	196.8	8.0
	50	320	1,116.7	1,658	3,175	33.2	5.0	674	179.5	7.0
C	20	129	114.6	180	180	9.0	1.4	637	24.6	7.5
	30	141	197.1	320	408	10.7	2.3	460	48.8	7.5
	40	153	331.4	520	739	13.0	3.4	637	57.9	7.0
	50	165	550.4	700	1,201	14.0	4.2	786	56.7	6.5
D	20	10	12.4	150	30	7.5	15.0	80	6.6	9.5
	30	15	24.6	240	50	8.0	16.0	104	5.9	7.0
	40	20	45.3	300	66	7.5	15.0	151	2.9	6.0
	50	25	78.1	350	77	7.0	14.0	223	(-)0.1	5.0

Note: 360 Yen=1 dallor, 3.6 Koku=1 cubicmeter

In Table 1 "Production Index", A is the case of planting of 7,000 per hectar hinoki under intensive system and B is 4,000 sugi under intensive system and C is 4,000 hinoki under comparatively extensive system. Under these conditions and same economic location, the table shows the relation of expenses and proceeds.

The labour and expenses in A, which has the final age of 20—50 years, is the largest and D, which is the coppice-forest by natural regeneration, is the smallest. On the other hand, yield (harvest) and proceeds (profit) is the largest in A and decrease with B, C and D. The annual average increment is large in B, because of sugi, but in hinoki stand A is larger than C. Productivity in relation to 1 labourer shows average of 1—4 Koku, but in D, it is large as 15 Koku, because of employing no working labour.

Because of this fact, the expense per 1 Koku harvest is the smallest in the coppice-forest. Others are larger and will increase with postponement of the final age. The smallest value is shown at A 30 years, B 40 years and C 30 years. Such calculation is made for study how labour should be employed and how the final age should be estimated when start production.

From the view point of expenses, coppice-forestry D also is not bad, because nothing is done after harvesting. However, its yield from 1 hectar is very low and will not increase even if harvesting is postponed. In C yield and proceeds increase 6—15 times than D. Moreover, 30—40 times of proceeds from the same area can be expected, if intensive method is applied as in A or B.

Of course, even if planting is profitable, it cannot be done to transfer all area into reforested land. The conditions of charcoal producers and planting expenses in district must be considered. But it is better to increase yield and proceeds by getting the most profitable working method according to the owner's private condition or the location of the forest.

Table 2. Ratio of Proceeds to Cost of Production.

Rate of Interest %	Final Age	20	30	40	50	60
4		2.2	3.3	4.9	7.2	10.6
5		2.7	4.4	7.1	11.5	18.7
6		3.3	5.8	10.3	18.5	33.0
7		3.9	7.7	15.0	29.5	53.0
8		4.7	10.1	21.8	47.0	101.3
9		5.7	13.3	31.5	74.0	176.1
10		6.8	17.5	45.3	117.4	304.5

Also Table 2 will give an idea of the percentage of profit. In C where the final age is 40 years and yield ¥739,000, if the cost is say ¥40,000, the rate is about 16 times. This magnification, if applied to the 40 years column in Table 2, will show approximately 7%. The figure ¥330,000 on Table 1 (C—40 years) is based on compound interest of 5%.

Therefore, by using these Tables, the percentage of profit of the local forestry and the effect of price fluctuation can be obtained easily.

From the stand point of private forest owner, the final age is not necessarily

considered so nervously. The price will fluctuate in a long period, but trees can be sold when the price is high, or come in use in case of need for the family. So the final age is not considered at the time of planting. However, to manage a vast forest systematically, or when the profitable final age is near, it is better to pay this some consideration.

The final age differs according to aim the maximum of whether the amount of harvest or proceeds or profit or percentage of interest. For example, the age of maximum annual average growth shows the age of maximum yield, which is A 30 years, B and C 50 years, D 30 years. On the other hand, the profit is the maximum at periods of A 30 years, B and C 40 years, D 20 years, which are a little earlier than the years of the maximum yield. The maximum efficiency of capital is A 20 years, B 40 years, C 20—30 years and D 20 years, which shows the preferability of young final age.

The determination of the final age differs according to the economic purpose of the forest owner as explained before. However, in case of medium and small ownership, especially in case family labour is adopted mainly, it is better to seek increased yield and prolonged final age somewhat.

Chapter 7. The Form of Forestry Recomendable in Mountain Villages

Economy of mountain villages is said to be susceptible to the condition of the market, especially to the depression. It is without doubt that in addition to the poor productivity of agriculture, if the timber price drops, the living conditon of mountain village people will become very tight. In such case, dumping of timber is a well known fact. As a result, the price will drop further and accelerate the economic depression of the village. It also decreases good forest stumpage and keep the income of forest owners low for many years.

The understanding of the forest production cost explained before must be stressed. Because of reasons that surplus labour is employed, natural product is harvested or expenses paid long ago can not be known, the timbers are sold regardless the expenses invested, which in turn lowers down the timbers price. Although the expenditure might be paid many years ago, the present cost value must be considered. Therefore, the owner must have an idea of the cost of his forest products and try to sell them above this cost as far as possible.

As a general trend, the timber demand increases with the developement of industries and welfare of the nation. The timber demand is at the present influenced much by the amount of the government fund, but as many housing in the cites are temporary barracks, the demand and its conditions will become better with the increase of national income. The demand for raw material timber, such as pulp is increasing remarkably. Also, from the general economical point of view, as financing, promotion of industries, price maintenance, etc., based on the economic policy of the government, are gradually being well planned, it can be said that as far as incidents like a war do not happen, forestry will not be disturbed by such severe depression as in the past.

From this standpoint, the following can be said regarding the operation of forestry in villages, as their important source of production.

1. It is better to promote afforestation to acquire increased yield at the earliest, for the present supply is far lower than the demand, and the remarkable increase of demand in future is foreseen. The period required for a forest yield is very long so that the work should be started as early as possible. It is certain that the economic power of forest owners will greatly increase in future. Therefore it is for the benefit of the village people to take up forestry on an intensive basis as far as the economy of the family allows.
2. Table 3 shows how the yields, profit and production expense varies with the working system and rotation, when the sustained yield is carried on 1,000 hectare area. A, B and C show the same characteristic forest production as in the Table 1. Some districts of these forests are in inaccessible area to the market.

From the table, it becomes clear that with large area and planned working, the profit increases with longer rotation. A has its largest at 30—40 years, which is 23,000 Koku, but proceeds is the largest at 50 years. The profit is larger in 40 years (¥30,400,000) than 50 years, but the actual money amount the owner gets (capital interest+land rent+profit+operational cost) is larger in 50 years (¥512,000,000) than 40 years (¥477,000,000). As a result, the total income of forestry and timber industry, by adding total production cost after

Table 3. Sustained Yield

Working Method		A			
Rotation		20	30	40	50
Forestry					
Value of Stumpage	{ Volume	200	316.5	422.5	518.0
	{ Price	320	537.8	877.5	1,005.0
Yield	{ Volume	20	23	23	21.2
	{ Price	32	45	50.1	54.1
Cost of Production	{ Interest	7.5	11	15.8	22.7
	{ Wage for Working	4.7	3.2	2.4	1.9
	{ (13.5)	(13.5)	(9)	(6.8)	(5.4)
	{ Wage for Management	0.7	0.7	0.7	0.7
	{ (2)	(2)	(2)	(2)	(2)
Profit		18.3	29.3	30.4	28.0
Timber Industry					
Capital for Lumbering		36.8	50.5	55.6	59.2
Cost of Production	{ Interest	3.7	5.1	5.6	5.9
	{ Wage	4.8	5.5	5.5	5.1
Profit		(12)	(13.8)	(13.8)	(12.7)
Proceeds Sum of Forestry and Timber In.		44.2	60.7	66.8	71.0

Note: Unit of volume—1,000 Koku, Unit of Price—¥ 1,000,000
 ()—Number of Labourers. Unit of number—1000

cutting, will be 40 years ¥668,000,000 and 50 years ¥711,000,000.

This is an important reason why, in planning forestry, the legal final age is fixed to prevent the early cutting. Except special cases, the higher the final age, the more the income.

One of the problems here is the labour. Ordinarily, the management is done by family labour, but planting and caring of forest require quite a few of hired labour. Table 3 shows that longer the final age, the more the owners income (interest, rent, profit, etc.) and lesser the labour and wage.

But, beside where labour is unnecessary, the owner must see that the total wages do not decrease so much. However, where extensive forest production was the usual practice, as in C where rotation is 40—50 years, if it is gradually transfered to A method where rotation is still 40—50 years, the required labour will become double during the time and in future, with the increase in yield, the required labour in timber industry will increase.

In any case, and in contrast to other industries, the owner will be able to retain most of the income as shown in Table 3. This is the characteristic point of forestry.

Working per 1,000 hectar

B				C			
20	30	40	50	20	30	40	50
140	216	410	568	90	142.8	207.5	286
140	231.5	568	886.4	90	152	240.8	375
14	21.6	30.7	33.2	9	10.7	13	14
14	30	51.5	63.5	9	13.6	18.5	24
6.8	9.8	14.1	20.2	3.3	4.8	6.9	9.9
4.0	2.7	2.0	1.6	1.8	1.2	0.9	0.7
(11.5)	(7.7)	(5.8)	(4.6)	(5.3)	(3.5)	(2.6)	(2.1)
0.7	0.7	0.7	0.7	0.4	0.4	0.4	0.4
(2)	(2)	(2)	(2)	(1.2)	(1.2)	(1.2)	(1.2)
0.8	0.8	0.8	0.8	0.4	0.4	0.4	0.4
1.7	16.0	23.9	40.2	3.1	6.8	9.9	12.6
17.4	35.2	58.9	71.5	11.2	16.2	21.6	27.4
1.7	3.5	5.9	7.2	1.1	1.6	2.2	2.7
3.4	5.2	7.4	8.0	2.2	2.6	3.1	3.4
(8.4)	(13)	(18.4)	(19.5)	(5.4)	(6.4)	(7.8)	(8.4)
1.7	3.5	5.9	7.2	1.1	1.6	2.2	2.7
20.8	42.2	70.7	85.9	13.4	19.4	26.0	32.8

Part II

Form of the Forest Business Management

Chapter 1. Introduction

The forestry management is a systematical economic unit, that makes the forest production i. e. forest industry in succession.

The forest production means the realization of the process of the production in the forestry. It handles forestlands or forests as its object and uses labors and several other capital goods, and increases growing stocks at the expense of these values and produces forest trees or timbers or some other forest produces and sells them. Such forestry production is carried out by such individual economics as farmers, foresters, merchants, corporations, cooperative associations and even the national government itself or some local public organs. And, when these forest productions are systematized as an independent department of production and the work of production goes on in succession as an economical unit, this whole system is named the forestry management or the forest management system in more strict sense of expression, and the subject of its economy is called that of the management or the manager.

Accordingly, we mean the types or forms of business management by the “forms of management”, that are the system of management and in other words, the systematic organ of the continuous production.

We can classify these forms of management accordingly in and between the several kinds of industries and also in the same kind of industry by using the proper marks. For instance, we may use the following methods in classifying the forms of management in the several kinds of industries.

1) Difference in the process of production.

Management of extracting-value-from: This is one which gains the raw material from the nature and may as well be called as the department of the primitive production. Management of delivering value: This is what we call the department of the manufacturing production.

2) Difference in the positions of the goods or services between the nature and consumers: Classifications in this category are made as the primitive production management, manufacturing management and commercial management.

3) Movability of management:

Settled Management: Pertaining to the land industry.

Semi-settled management: Industrial management is chiefly included in this category.

Shifting management: Here are fishery, live stock industry, simple saw mill and timber producing business.

4) Kinds of the products.

Management of the goods production: Pertaining to the production of common materialistic goods.

Management of services: This is one which produces the service or utility goods such as school, library and transportation business.

Based upon these classifications, it is easy to agree that the forestry management has its chief nature in the extraction of value-from, primitive production, settled, and property producing managements. In managing the protection forest, however, as long as its immaterial utility comes into a question, it is the management of service. And, the main kinds of these products give special characters concretely to the management of the industry. It is understood that the forestry management has the different method and system of production from the agricultural management because the forestry management makes the forest products such as timbers its chief object of production.

The classifying work of the management forms within the forest business has been more or less made so far, but more attentions have been drawn upon the classification that is based on the difference in the techniques of producing and systematizing. The working system, regeneration and afforestation and caring, the final age, and etc., were used depending upon the species and wood quality that were then the purposes of the production. And besides, it was considered that the difference in the management forms depended on the sustained yield production or intermittent one. And in case of the forestry management, the structures of the forest have a fairly big influence on the purpose and the result of the management, and so its materialistic system has important significance. Accordingly, it is needless to say that the technique concerning its systematizing makes a foundation for classifying the forms as the attributes to the management.

But, in this treatise, we set the foundation of classifying the forms on understanding the economic nature of the management. And, in case that we deal with the technique which is a systematic organ, we study its nature as particularly on the side of the economic concerns as possible. On this purpose, we are going to study the management forms in the following chapters as:

1. Classification of management based on the economic type
2. Classification of management by the type of enterprise
3. Several types of management based on its several subsidiary natures.

First of all, the management itself comes into a system and is carried out in accordance with the principle of the economic nature. But this economic nature is originally the principle of controlling the system, so accordingly it depends on the purpose of value imposed on the management itself and it has a little different regulations. This can also be found by the fact that the conception of the rationality of the management has been fairly changed as the motives of the management and production changed historically.

Besides, we come to think that even under the present capitalistic economy, there are still various purposes of values of higher ranks that define the economic nature of the management. They arise specially from the nature of possession. The difference in these purposes of value, namely the purposes of economy gives the foundation upon which the economic types of the management can be classified. This is the most fundamental part as the type of the management.

Secondly, the management brings out the difference in the economic system and

gives each different character to the management forms, all according to the detailed forms of possessions, the content of the investments and the relation between the way of directing the management and above these. Several of these types based on these natures are studied as the types of enterprises in the general management theories, including the associations and the public enterprises beside those which are defined as the several kinds of the forms of the corporations by the laws. So the nature that is shown in the forestry management by these various types, will be studied.

In the management, the economic types and the types of enterprise are equally classified by the difference in the economic nature of the management, so we could put these together in the same category as the economic types. But we give a particular chapter to the forms of enterprise, as the words “forms of enterprise” are generally used, and we can describe them in uniformity.

The first chapter deals more closely with the management, as already described, and the second one can be said to show its foundation. As far as the contents are concerned, we are going to study the management forms of the same kind in two different chapters, but each chapter is studied in the different point of view from the other and we can well understand the nature of the forestry management in view of the economic structure by studying both of them.

The classification of the various forms based on the economic nature is not necessarily particular to the forestry management. But so long as we deal with the subsidiary natures of the forestry management system which we study as the technical system in the third chapter, we see the nature that is particular only to the forestry production.

At first, the kinds of the products make the difference of a fair degree in the suitable land for afforestation, working system, method of regeneration and the final age. And according to the difference of these techniques in production, the structure of the forest, as the materialistic system, will change.

This materialistic system is systematised and operated by the management, together with the management system that is in other words, the human system, as being led by the principle of the economics. Even in this case, however, especially the purpose of the economy sticks to the management, and so it can happen that the management shows the different aspects of production. These aspects appear in the forms of the ways of dealing the forest products that are naturally decided in a long period, the sorting of uses of the woodland and growing-stock based on them, the difference in investing the productive goods that is more or less influenced by putting more weight in the intensive labour or intensive capitalization, and the changes of plans on maintaining the capital as the continuous systematic organ. These classifications show the natures pertaining to the systematizing techniques of the forestry management.

Accordingly, in the chapter dealing with the various forms that are based on the subsidiary natures of the management, we make the classification by dividing the subjects as follows:

Kinds of products, method of selling the forest products, the technique of production, management system, the uses of the woodland and growing-stock, the

difference in arranging the investments to the productive goods, the management system and the degree of the maintenance of capital (succession of production).

Chapter 2. Economic Forms of The Forestry Management

1. The historical change of the economic forms

The author tries to understand the change in the management forms from the view-point of the changes in the motives of the productive activities.

Karl Bücher (r. i.), in classifying the steps of the economical development since the old days, takes the distance, in which the goods reach from the producers to the consumers, into his consideration and classifies these steps in three and at the same time, he shows the form of the production in a particular period.

(r. i.) Karl Bucher: Die Entstehung der Volkswirtschaft

1. Period of closed home economy—Home-economic production
2. Period of town economy—Journey-man's production
3. Period of national economy—Capitalistic production

Such steps of the economic development as are classified by those periods, are approved in our country. The outlines will be made on the development of the forestry production in each of the periods and the characteristic nature of the production form in each period will be described as follows.

1. Period of closed home economy.

We understand that the forestry as an industry has made the most slowly development, but the history of use and consumptions of the forest products is as old as that of mankind. The primitive men led the lives of "from hand to mouth" in the natural forests by catching wildlife and collecting fruits and weeds. And it is imagined that they used wood and bamboos and the like as fuels and tools earlier than they did on other materials. As the population increased, more fuel-woods and timbers were required. The forests that were conveniently located, were cut down and some of them were burned for farming and lost. And as the accessible forests became short, the people gradually taking advantage of the rivers, lakes and seas, they cut down the forests far back in the country or in the distance sometimes partly and sometimes wholly. The forest which has naturally been formed on cut over area is called the natural forest. This formation took place in Japan in the period of the family economy.

As time went on, the natural forest increased, but the species for saw timbers were suppressed by the other species and did not grow well. At the other hand, it took so much time to cut and carry timbers out of the far away forests. Thus, the shrines and temples and the powerful families in the middle age undertook plantations with species for saw timbers. This purpose was to prepare the woods necessary for their own economy. In these ages, as the Samurai (warriors) rose up, the forests were used as the place for hunting, and were also partially burned away for pasture. In Europe, the grazing inside the forest came into fashion and such deciduous trees as oak and other broad leave trees were esteemed.

The production for home economy which is the characteristic of this period, was carried on independently of the outer economy in order to produce the wood directly necessary for the family. The following formula shows the process of

production.

$$W \begin{Bmatrix} L \\ Pm \end{Bmatrix} \cdots \cdots Pr \cdots \cdots W' \begin{Bmatrix} L' \\ Pm \end{Bmatrix} \quad (1)$$

They make the production “Pr” by using the family’s and the servants’ labours “L”, and the other productive means “Pm”, and they gain the necessary products “W’”. Here “Pm” shows the consumption of the productive means. This is what we call autarky; it is an economic unit which produces the consumer goods “A” necessary for every year’s lives and complements the consumed portion in the productive means within its own economy. All the process in the formula (1) are so called process of the economic circulation and among them, $W \cdots Pr \cdots W'$ is the process of production. In the historical point of view, as the population grows up, the tendency of $W < W'$ and $L < L'$, are found, but it is not inevitable in this form of production.

The forestry of this period has its origin in the random production of the materials that are necessary for the lives of the big economic unit such as the large families. As was already mentioned, it produced for instance, the nuts, masts, vegetables, games, woods, barks, and fuelwood. But in some of saw timber forests for self-supporting purposes, owned by the powerful families, they began to make the organic production in the sense of the formula (1).

2. Period of town economy.

As the town economy progressed, the new developements in the social circumstances such as the freedom of human right took place. And the increase of the population, the expansion of the human desires and the development of the techniques followed them. Gradually the economical society based on the division of labour was formed and the economic unit dissolved and grew smaller in size. The transactions of commercial goods by money prevailed. As the merchants’ accumulation of the capital advanced, the town economy was formed and as the various commercial goods were sold, bought and exchanged, and some of the forest products were on sale.

In Japan, the modern feudalistic period began in those days. As the felling of forests advanced, the source of the rivers dried up, and the flood-damages were frequent. The landlord sometimes forbade or controlled to fell some parts of the forests and on the other hand, he joined in the afforestation on woodland for conservation of water supply or prevention of flood-disasters and encouraged his people to join in the work. This was useful for the maintenance of the territorial economy together with the common forest for the agriculture in the same sense as that the inorganic forest production was useful for the autarky of the economic unit in the days of home economy. But timbers from afforested and protection forest were generally used or sold when it turned to be the matured forest and the profit then gained was added to the house hold economy of the landlord or some people in his territory. Besides, the virgin forest that were available decreased gradually, and the growing-stock of natural forest grew still smaller. Consequently the general demand for the timber and fuelwood could not be met. These facts resulted in the rise of the price of the forest products. Stimulated by these

circumstances, there came out some individuals and villages that tried the afforestations in the hill-side districts. Until then, the most of the forests belonged to the landlord or the village but there increased the privately owned forests.

In the period of the town economy along with the development of handicrafts, the journey-Man's production tookplace, This is the production system in which the producers are engaged in the production of commodities by his own, his family's and apprentices labours. The process of the production is shown in the following formula.

$$W \left\{ \begin{array}{l} L \\ Pm \end{array} \right. \cdots \cdots Pr \cdots \cdots W' - M - W'' \left\{ \begin{array}{l} L' \\ Pm' \end{array} \right. \quad (2)$$

He produces by his own and apprentice's labours "A" and productive means "Pm", gains the product "W'", and sell it. With the price gained "M", he purchases the consumer goods "A'" and a portion of the productive means to complement. And he spends these for the cost of living and for production during the next period of the poduction. "Pm" does not show the whole of the productive means, but its depletion.

The essence of this productive activity lies in the aquirement of the goods necessary for daily life by producing the commodities, taking the continuous advantage of the family labours. Accordingly, it is not the system to accumulate the economic value "M" as much as possible as in the capitalistic economy. This is so called the step of the simple production of commodities. The principle for ruling this is the principle of the occupation which is described later.

Now, in this case, when the management that has both departments of commodities production and of the self-supporting production, is applied, the production and at the same-time, the economical circulation take place as shown in the following formula.

$$W \left\{ \begin{array}{l} L \\ Pm \end{array} \right. \cdots \cdots Pr \cdots \cdots W' \left\{ \begin{array}{l} W'_1 \text{ (self-supporting part)} \\ W'_2 \text{ (commercial goods part)} \end{array} \right. \left\{ \begin{array}{l} L'_1 \\ Pm'_1 \end{array} \right. \left\{ \begin{array}{l} L'_2 \\ Pm'_2 \end{array} \right. \left\{ \begin{array}{l} L' \\ Pm' \end{array} \right. \quad (3)$$

In the field of the forestry, especially in its origin, such forms of production as described above were generally applied in its department of the inorganic production. In Japan, this example is found in the production done by the Kiziya (wood worker) using the lathe, and the production of the timbers and charcoal engaged jointly as a unit. In that case, the formula (2) is applied to the case where only the process of the commodities production is concerned. The formula (3) also includes the case where the gains of the by-products such as the materials for fuels and the timber take place. Now in both of these two formulas, W' can be either bigger or smaller than W. But in this period, as the motives of the production lie in the maintenance of the livelihood, W' become rarely bigger than W so suddenly. It is rather considered that, because of the development of the wholesale system, the amount of W''₂ that is exchangeable for W'₂, is controlled, and then the system mostly follows the process of the simple production or that of the reducing reproduction in which W' turns smaller than W.

And as already described, in this period, the forest resources gradually grew less, and therefore the district where the organic production was needed, grew more. And it is in this district that the forestry management was carried out. In the beginning, the management took place in the forest owned by the feudalistic landlord in the form of the formula (3). On the other hand, in the process of the organic production of the forestry in the villages, the stumpage capital decreased gradually and it was not rare that even the forestland and forest itself were sold in order to keep the household economy. This process is shown in the following circulating formula. In this formula, however, “Pm” shows the total amount of the productive means indicating the loss in the capital, and the self-supporting part is eliminated,

$$W \left\{ \begin{array}{l} Pm - Pm_1 \\ L \\ Pm_1 \cdots M \cdots W_0 \end{array} \right\} W_1 \cdots Pr \cdots W' \left\{ \begin{array}{l} Pm - Pm_1 \\ W' \cdots M \cdots W_1'' \\ L' \end{array} \right\} = Pm - Pm_1 + Pm' \left\{ \begin{array}{l} Pm - Pm_1 + Pm' - Pm_1' \\ Pm_1' \cdots M \cdots W_0' \\ L'' \end{array} \right\} W_2 \quad (4)$$

The villagers come short of the household economy during the period of the production, sell the land and the stumpage capital itself “Pm₁”, appropriate the money for the cost of living “L”, and still engage in the production with the use of the rest of the capital and labour and finally gain the total capital “W’”. In this process, however, as they cannot maintain the household economy during the next period of production only with the sales of the products “W₁” which should be originally sold in accordance with the degree of the timber growth, they again sell the capital “Pm₁’” and continue the production with the rest of the capital. In that case, Pm’ < Pm₁ is generally supposed, so it is in the process to reduce reproduction. On the other hand, more capitals are invested by the landowners and merchants on the forests and woodlands that were sold by the villagers, and the organic production is carried out.

One of characteristic natures of the productions in this period, is that there were many so called productions by the order. This corresponds to the market production which shows a characteristic nature in the market the main productions in the following period of the national economy. This production by the order is carried on in the narrow market and the general demand is limited. This production is carried out by the order of those particular purchasers. Accordingly, the production depends on the circumstances of the buyers, and therefore the process of the production itself cannot develop independently. Especially in case of the inorganic forestry production, it was not seldom that there lay the powerful feudalistic authorities and the timber merchants between the production and the urban demands and even in case of the organic production, the landlord forced the people to engage in the afforestation in place of the tributes, and the capitalist in the village ruled the communal forestry in the ways of leased land forestry. These can be considered some forms of this production by the order.

3. Period of the national economy.

We are now in the period of the national economy. Here, the production is not made for the particular demand of the market. It is the market production. The

division of labour is remarkably developed, all the property become the commodities, and the production is the enterprise. They have to go through several economical channels to the consumers. Therefore, this period is also called the period of the commodity production or of the circulation of the property. The reason why this is called the national economy, is that such steps of the economical development came into existence with the realization of the modern nations.

The development in this period took place as the growth of the capitalism in Japan since the beginning of the Meiji period. The characteristic nature of this capitalistic economy is the commodity production of the capitalistic system based on the system of the private property, having its object in the market. The form of the production of this kind is the capitalist's production, and the place where such a production is carried out is what we call the enterprise, and it purchases, the labour and productive means by taking advantage of the capital. It furthermore pursues the profit, and its process of the production is shown in the following formula.

$$M-W \begin{Bmatrix} L \\ P_m \end{Bmatrix} \dots\dots Pr \dots\dots W'-M' (M+P) \quad (5)$$

This capitalist's production uses the capital "M", purchases the production goods, conducts production "Pr", and tries to make the difference between the money "M'" gained by selling the products "W'" and the firstly invested capital "M", which is namely the profit "P" as much as possible.

In the management of the production of this kind, when the enlarging reproduction is carried on, it is shown in the following formula.

$$M' \begin{Bmatrix} M-W \\ P \end{Bmatrix} \begin{Bmatrix} P_1-W_p \\ P_2-W_c \end{Bmatrix} \begin{Bmatrix} L \\ P_m \end{Bmatrix} \dots\dots Pr \dots\dots W''-M'' \quad (6)$$

Here, a portion "P₁" of the profit "P" is used for purchase of the production goods "W_p" and the amount of the production elements grows larger (W < W + W_p), and much more commodities are produced by way of the enlarging reproduction. On the other hand, "P₂" is appropriated for purchase of the materials for the capitalist's livelihood "W_c".

But, in the forestry management, even to-day we find only a few examples of the pure capitalist's management, to which the later description is to be referred. We only see the near similar examples in some of the corporate enterprises. But when it starts from the monetary capital, and the forestry is once organized on a company level, it can get profit which is comparatively sure but low in rate, and when the price is on the increase, the profit rate for the nominal capital is not necessarily low. In the production management of this kind, the productions shown in the formula (5) and (6) are carried out.

Besides, there are to-day various forms of production because of the nature of the forestry production and forest ownership. Firstly the autarky shown in the formula (1) still continues covering a pretty wide area, as a department of the forestry management or the forest production department in the category of the agricultural management—we call this the sub-management of the forestry—, on the

purpose of gaining the materials for self-supporting. In these materials are included beside timbers and fuel-woods the materials for the fodders and manures, fruits, and mashrooms. These forests are called the farm forests, or forests for self-supporting.

But, most of the forestry are to-day the ones to produce the commercial goods. Even in these managements or the sub-managements of this kind, especially the private forests make their hereditary forests their objects, and they do not do the business based on the capital counting, so that their process of production is rather close to the one shown in the formula (3). Especially in the district of Kitayama in Kyoto and the peninsular of Noto, there are small sized managements, which invest the household labour in a large quantity upon comparatively small area of forest and carries out the organic production and gains the materials for the livelihood. Such is not of the middle ages in its economic spirit, but is close to the journey-man's production in its form of production. It is thus, that the purpose of the production is to gain the materials necessary for the livelihood by selling the products, and not the unlimited accumulation of capital, and besides it cannot be achieved no matter how much it may be hoped.

In case of the private forest, however, as the scale of the management becomes larger, great amount of the employed labour is needed, and the formula about which is a little different from the formula (3).

$$W \begin{Bmatrix} L \\ \dots Pr \dots W' \\ P_m \end{Bmatrix} \begin{Bmatrix} W'_1 \text{ (self-supporting)} \\ W'_2 \text{ (commodities)} \end{Bmatrix} \begin{Bmatrix} W'_L \\ W'_P \end{Bmatrix} = \text{house-hold cost} \quad (7)$$

$$\begin{Bmatrix} W''_L \\ W''_P \end{Bmatrix} = W \begin{Bmatrix} L \\ P_m \end{Bmatrix}$$

Here, the forest owner's=manager's economy of production and that of consumption are separated, and we find the form in which the wages are paid differently from the manager's cost of the house-holding. And it is needless to say that W' is bigger than W in the beginning of the term. In this formula, the case that the production capitals in the beginning and the ending of the term are equally " W ", is shown, but it is not rare that the " W " at the end of the term turns bigger than " W " in the beginning according to the plan of disposing the production capital.

That these managements belong to the management form of the economics to complement the house-hold economy will be stated later.

In Japanese forestry, the management of the national forests plays an important role. From the fact that the management is today based on the system of the special account and the tendency to follow the principle of the industrial accounting, the capitalist's way of production in accordance with the formula (5) seems to be applicable. But, so long as the management of the national forests reinforces the forestry which is the lowest in its productivity of the national economy and tries to give the higher degree of contribution to the national economy in the long period, its direct purpose is not the profit gaining, as in the capitalist's production but to maintain and increase the real capital in the long period, and not the nominal monetary capital. The formula based upon these viewpoints is shown as follows.

$$\begin{array}{c}
 \left\{ \begin{array}{l} Pm_0 \\ \parallel \\ M_0 \end{array} \right\} \left\{ \begin{array}{l} W_0 - \left\{ \begin{array}{l} L \\ Pm_0' \end{array} \right\} \\ M_0' - W_0' \end{array} \right\} \left\{ \begin{array}{l} L \\ Pm_{+1} \end{array} \right\} \left\{ \begin{array}{l} \dots Pr \dots Pm_1 \\ \parallel \\ M_1 \end{array} \right\} \left\{ \begin{array}{l} W_1 - \left\{ \begin{array}{l} P \\ M_1' - W_1' \end{array} \right\} \\ L' \\ Pm_{+1}' \end{array} \right\} \left\{ \begin{array}{l} L_1 \\ Pm_{+2} \end{array} \right\} \quad (8)
 \end{array}$$

At the beginning, it starts from the production caital " $Pm_0=M$ ", the real object, and purchases the productive means " Pm_0 " and labour " L " by selling a part of the stumpage " W_0 ", then systematizes these ($Pm+Pm'_0=Pm+1$) for the production, and sells some parts of the real capital resulted from the production as the commodity W_1 , and goes on in the same ways. In this process of the production, as long as the productivity can be increased at least by the way of increasing the production capital effectively ($Pm < Pm_1 < Pm_2 \dots$), will come to appear $W_0 < W_1 < \dots$ in the long run. In these results, the amount of the monetary capital will turn to be $M < M_1 < \dots$. If the profit " P " is gained in the process of these productions, it is turned in the revenue account of the treasury, but this cannot always be expected as the principle of the management.

In the forestry management of the local public bodys, it is considered the production forms shown in the formula (8) should be essentially applied. But, in case that they want to get " P " chiefly for the local finance, it brings about that " M_0 " gets constricted and then the " W_0 " decreases to result in the insufficiency of investing the production goods. And even when the purpose of the management is not mainly " P ", " W_0 " can be constricted affected by the relations with the local lumber industry. In these case, it is considered that $Pm_0=M > Pm_1=M_1 > \dots$ may appear.

The forestry management which is run by forest cooperatives is a few in number, but the capitalist's production as in the formula (5) takes place in the process of the transactions with the outer economies, (but in this case, the profit " P " is returned to the members of the co-operative), and in case of the supply to its members, the formula is shown as follows.

$$M - W \left\{ \begin{array}{l} L \\ Pm \end{array} \right\} \dots Pr \dots W' - M \quad (9)$$

In this form of management, even when it starts from the monetary capital collected from the members of the cooperative or from some other sources, its purpose is not the profiteering, but collection of the invested capital. The nature of such production is also seen in the national forests and public forests.

II. The classification of the management by its economical purpose

The fundamental classification of the economic forms of the present forestry management is based on this classification by the purpose of the management. The forms are classified as follows.

1. Purpose of the profit pursuing economy
—Form of the profit pursuing
2. Purpose of the economy to complement the family finance
—Form of the economy to complement the house-hold economy
3. Purpose of public economy
—Form of public economy

4. Purpose of the cooperative

—Form of the cooperative

The following will be explained in each of the above described items the meaning of the managing purpose and the ways that they affect the circulating structure of the value in the management.

1. Object of profit pursuing economy

This is the object pursued by the corporation's forest which exists on the preposition of the concentration of the capital, especially pursued in the management of the corporation. This is so called the object of the enterprise which is now general in the management of the commerce and industry. The enterprise is the economic form that aims to gain the maximum profit by carrying on the market production of the commodities based on the capital counting. This maximum profit means the maximum in the profit rate for self-capital, and in case that the whole capital is the loaned capital, it is understood to mean the maximum of the profit itself. The process of these productions is shown in the formula (5) or (6).

The suppliers of self-capital are the investors and generally they take part in the management control, so that they are called the entrepreneurs. The entrepreneurs borrow the outsider's capitals beside the self-capital, purchase the capital goods such as the land, stumpage and others, and set up the managing organs. And thus they carry out the production, by borrowing some more lands if necessary, organizing the management and employing labours. They sell the products to the market, and pay for the rent, interest, salary, wages, taxes, public charges, insurances and the cost of the consumptive capital goods out from the proceeds and they gain the profit that is the surplus in the proceeds after costs are paid. This profit contains the entrepreneurs, profit and the interest on self-capital.

In the present forestry, as state later, there are yet few of the business managements which can pursue purely the greatest profit while it competes with the enterprises in the other industry. Although it is true that we cannot disregard the growth of the company forests, there are many of these which belong to the enterprise of the other kind, or which try speculatively to take advantage of the price changes of the forests or the forest products. And there are still few management forms that lay the object in the profiteering through the process of the production management.

The reason why such management forms are few is partly due to the difficulty in setting up the management system, but fundamentally the remarkably low rate of the profit in the forestry. But, even in the forestry management the following prospect is possible. As the capitalistic economy advances, the rate of the market interest will be lower with the increase of the capital accumulation and the detour of the production in the whole national economy tends to promote. And, as in the past the continuous effective demand for the forest products increased, it is understood that the supply which is over the forest growth continues in the long period. These facts show that the price of the forest products has a tendency to rise. From the prospect of the falling of the market interest rate, the business management is possible to carry on, even if the present low profit rate in the forestry management continues. And if the prospect of the future price rise is added, the rising of the

profit rate in the future can be expected. If the entrepreneurs have such prospects as above, and cannot prepare the other management that can make the profit rate higher than this, they will invest their capital in the forestry management.

Anyhow, however difficult it may be, it is more probable that in these circumstances, we can gradually draw up the forestry management out from the limit enterprise in which the profit is seldom expected, and then we promote the capital investment in this management.

2. Object of the economy to complement the family finance.

This object is to complement the demand for the goods like that of the public economy, but its difference from the public economy is that the start of the management will be the private consumption economy, namely the house-hold economy. The principle that rules the economic form based on such an object, is the principle of complementing the house-hold economy or the principle of occupation. The principle of occupation is more strictly understood than that of the complementing the house-hold economy. This is originally one of the objects of the middle aged agricultural management. The farmers engaged in the labour to the limit just necessary for the livelihood, as a concrete proof of the occupation principle, and they thought they did well enough to satisfy the object by rationalizing the relation between the degree of satisfaction, and the degree of the pains derived from the labour to gain these desires. Especially when the house-hold economy demands the utility in the form of the produced goods, this is shown in the previously described house-hold economical production, i. e. in the case of the selfsupporting production which takes the process of production shown in the formula (1), and the ways of production become subjective.

But, the object of today's agricultural management is not necessarily acknowledged so low a step as those. When the demand puts importance on the currency that makes the produced goods its means, first of all the managers try to sell the products as high as possible, and in the next step, the form which takes it into the consideration to rationalize the relation between the expenditure and revenue as much as possible, even if the whole capital counting is not carried out, can come to existence. In this way, no matter how partly it may be, as the revenue and expenditure counting is made, it comes near one step to the profit-pursuing economical form. But, the house-hold economy and the production economy are still not separated, and it cannot get out of the condition of what we call the house-hold business. So it is ruled by the tradition of the house-hold economy and cannot be specialized in the profit-making.

The economic form by this object is found in the management of private forests, needless to say as to the farm forests. They do not count their forest as the certain amount of capital, but they merely try to gain as much utility as possible. They generally do the simple commodity production besides making the self-supporting production in part, and the process of the production which is close to the formula (3), is found in many of those sub-managements belonging to the farm economy.

But when we look carefully, there are some classified kinds in the economic form following this object. The classifications arise from the difference in the direct motives to do the forestry production, though they are the same as to the

point that the object of higher value appears from the house-hold economy. In this case, they start the production from the concrete goods that are the contents of the forests, so that their direct motives are concerned with the means to take advantage of the stumpage. And these motives of taking advantage of the forests can be classified in the transaction-motive, precautionary-motive and the speculative motive. This is the same as Keynes showed the motives for holding of money. Indeed, as long as the stumpage is sold with the intention to gain the utility out of it, its holding is not different from the motive to hold money. But the period of holding as a whole is too long compared with that of money.

The transactions-motive is divided into the inner-transaction and the outer-transaction. The inner-transaction means of the supply of the forest products necessary for the house-holding economy or the other management production belonging to the household economy, and this is the self-supporting production as previously stated. The principle of occupation generally rules this form. The materials for fuels, grass and masts are every year collected from their own forests as needed.

But in case of the outer-transactions, some different circumstances appear because its intention is to gain the money necessary for the household economy by selling timbers or other forest products. First of all, it is desired that the products should be sold as profitable as possible and the least possible growing stock is aimed at. This is all because of keeping the growing stock as high as possible for next transaction. In the following step, such an intention is enlarged by the experiences and it grows to keep a part out of the amount of the present transaction for the future transactions. In this sense, the precautionary-motive will act as stated later. In the ways of the combination of the transaction-motive with the precautionary-motive, they work on the money of the house-hold economy, and by expending a portion of the precautionary money, the organic production, accompanied by the afforestation and the silviculture, is carried out. Thus, when the house-hold economy demands the money for its forestry management every year, the form of so called sustained yield is required for. In this case, the expenditure and income of every year are to be dealt as arising from the transactions-motive.

Incidentally, the reserved money, i. e, the liquidity preference is the function of income. Namely, the reserved money by the transaction-motive, together with that which by the following precautionary-motive, has the tendency to increase in line with to the increase of the income. On the other hand, the attitude to keep the growing stock may vary with the way how much portion of the income may depend on the forestry management.

In case when the most of the annual income depends on the profit from its forestry management. The money as the profit is chiefly spent for the transactions-motive, especially so as long as the total income is small. And the means to increase this income depends on the improvement of the forestry management. So both of the surplus of the domestic labour and the surplus money by the precautionary motive are invested in the forestry management, and as in the agricultural management comparatively intensive management can be made. This is what we call management based on income. But in this form, when the more rapid increase

of the income is needed, the management structure of the forestry is often destroyed. It means that there is no room for the management structure. On the other hand, in case of the large scale management, there grows the margining in the demand for money in the transactions-motive, and in the yield, so that the growing stock reserve for the precautionary-motive increases.

Now, when only a part of the income depends on the profit from the forestry production, the growing stock reserve by the precautionary-motive increases. This tendency is more promoted as a man receives more income. Because they do not need to prepare the growing stock for the transactions-motive.

The deal with the growing stock based on the speculative-motive is influenced by the owner's knowledge and commercial experience in the part. Because, so long as the deal by the speculative-motive is the function of the rate of interest as is the case of money, and understanding toward the rate of interest and especially the knowledge of the stock market is particularly needed. Such knowledge generally exists in the comparatively large incomes. But so long as the owner knows the nature of the forestry management, he will be satisfied with applying the reserve for the precautionary-motive at the largest, or a part of the growing stock to meet the transaction-motive, when they purchase the stocks because of the profitable rate of interest.

In short, the following classifications of the production forms are made based on the same object as the economy to complement the family finance.

(1) The production form based on the principle of occupation, and the form of self-supporting production. But these forms are now influenced by the economic considerations of the other forms, and the consideration of the worth counting is gradually being paid in this department of production.

(2) The production form which stress is put on the precautionary-motive; the form seen in fairly large number among the sub-managements. This form appears in the income structure which does not need to depend on the profit from the forest production in the ordinary times.

(3) The production form in which stress is put on the transactions-motive. This is common in the management of private forests. The appearance of this motive is remarkable in case of the small and middle sized managements. But as the management scale grows larger, the precautionary-motive and sometimes the speculative-motive are more or less connected with this form.

The characteristic natures of these production forms as of the economy to complement the family finances are, that as the object is imposed by household economy, the production is accordingly controlled by the capital and labour that are available in the house-hold economy, that although the partial revenue and expenditure counting is made, the capital counting is not carried out, and that its intention is to try to make the utility gained from the domestic income by subtracting the outer payment expense from the rough profit, to be the maximum. And as it advances from (1) through (3), the consciousness of the worth counting appears though partial it may be, from the subjective production form which mostly depends on the utility. And it grows to the production form which tries to be useful for the increase of the total house-hold income by increasing it from the

forestry management. The formula of the process of its production is close to the formula (3) and (7), but it is close to the commercialism taking consideration that it does not pursue the direct utility but it tries to make the utility great through the maximum income. But the reason why it cannot grow to be the form of the profit-making economy in this case, is that it is controlled by the household economy in the face of the amount of the productive element to invest.

3. The public economical object

This is the object in the public economy of the social or national nature, when the management production is made to meet the social demand. The principle which generally rules this kind of the management form is called the principle of the cost compensation. Being led by the production purpose of the national economy or the society, the deduction of the cost is made within the scope of achievement of the purpose. The management which this principle rules, is called the cost compensation management or the real cost management. Here the equation of the gross earnings=expense may exist in principle. This principle is understood as applicable to the general public enterprise.

In forestry, the management of the national forests and public forests are considered to take the form of this public economy. Although the principle of the cost compensation seems to be not realized in these management forms, the real significance of the existence of these forms can be understood by fundamentally approving the rule of this principle.

The meaning of this cost compensation is that the profit gaining is not intended although the effort is made on the management in the economic nature. But, in the cost accounting, the self-rent and the self-capital interest are naturally taken account, and accordingly the amount of these portions are carried in the treasury or the local finance.

In this form, the forest management, as the property of the national government or the local public body, is carried on naturally by the managing organ established by the government and the similar organ is established for the same purpose by the local public group when the management scale is large. But the field labours are hired.

The chief of the managing organ is responsible for the management and production of the national property. The products are chiefly sold to the free market, but according to the circumstances of the local economy, the price operation can be made. And in the long run, the products are sold to the national economy at the price close to the cost. The surplus which goes into the treasury is the capital interest and self-rent, and it can be said that the profit is not gained as a rule.

The various questions may arise about the actual aspects of the forestry management based on the principle of cost compensation. The author here states that there are three means. (1) We can decide the amount of the production in accordance with the investment of the intensive cost which does not bear the profit, by using the rate of interest common in the particular district at the proper time of the expected felling age. (2) By using the similar procedure in a certain intensive degree, we can decide the final age which does not bear the profit. (3) By combining these (1) and (2), we can establish the system of the combination of

the intensive degree and the final age without bearing the profit. In these combinations, each of the amount of the worth production and that of the volume-growth can be made to the maximum.

The principle of the cost compensation in the public enterprise can work in the same way when it is applied to the management of the public forest, but in other case, this principle is realized in the form of the combination of the production and the consumption economy. This is the case that the principle of the cost compensation is not always realized in its forestry production, but it is realized by way of compensating the finance of the local public organ with the use of the gained profit. Here the aspects of the management production show the same appearances as those of the economy to complement the family finance. But what is different from this aspects, is that as the result of the financial compensation, the local economy gets benefit like the deduction of the tax.

As the next step, if we suppose the exptreme case that there is completely none of the forest products in the management of the protection forest, there is of course none of the income as the capital interest and it is clearly the deficiency management. But in this case, when by its utility the increase of the worth that is more than the cost of fostering and maintaining of it comparing with the case that the local economy does not own it, is brought in, this deficiency management has the significance of existence in the economic point of view. The cost for this is met by the general taxes and public levy.

Accordingly, even in the case of the deficiency management, judging from the degree of its contribution to the local economy, it may be said that there exists at least the principle of the cost compensation. But as to recreational forest, protection forest, experimental forest, and so on, the efficiency of the existence cannot be estimated generally by the monetary value, so that we cannot but understand them to be the deficiency management.

Besides these, the principle of the cost compensation is carried out even in the corporation's forest. If the forestry of the corporation for sawmilling and pulping can supply timbers enough as within the market price, its main duties of the corporation is achieved.

4. The object of cooperative

The purpose of forestry cooperative is to assist its members' profiteering, or economy, through the so called community principle and union principle. So in case of the transaction with the outside market, it pursues the profit as the other enterprise, but to its members, it share the profit and the products at the lowest price. Internally, there rules the principle of the cost compensation. Concretely, it works as the side of the delegation, trust, agency business, loan of facilities of the cooperative and supply of products for its members. In this case, the real cost has only to be paid.

The facilities of the cooperative are supplied by the members' contribution. The kind of the business is various, but it is summarized as follows; it does the market production with the trust, and pay back the profit to the members. It offers them the facilities and the products at cost, and if it still has the surplus, it takes care of the managing organ together with the members' shares on the invest-

ments, and it returns the rest of the surplus as the profit to the members. It handles also the subsidies from the national government or the local public organ.

Chapter 3. The Enterprise Forms of The Forestry Management

I. Forestry management and enterprise

The enterprise is the act which operates the capital and gains the profit, and today it is represented by the company enterprise, especially by the corporation form.

In the forestry management of Japan, there are still few which can be called the enterprise in strict meaning. The reasons are summarized and shown in the followings, though some are already described.

(1) The forestry management is difficult to take interest of the market, as its profit is generally considered small on the nature of the process of producing the forest products.

The timber forest product is not valued until it reaches to certain diameter. And in order to grow it big enough, it must be kept in the forestland for a pretty long period. This period accounts as long as twenty, thirty and so many years, which is beyond our economical common sense. Furthermore the forest production is limited by land space and there is the law of diminishing harvest which affects more than in the agriculture. This is why the rate of the profit is controlled and is lower comparing with the long term rate of the market interest in the static-economy and this rate of interest is not attractive to capital market, because the prospect is very uncertain in the dynamic economy.

(2) When the new forest management is created, the business itself is not an easy task. Today the land ownership is settled, and the area of the private forests is divided in the extremely detail. So the possibility to establish the effective management system by purchasing these in a gross, is considered to be fairly limited. The reason why the private forests' owners do not intend to sell their forests, is due to the following factors.

(3) The forests and forest lands are generally owned as the enjoyment goods, and so the estimation of their values are subjective and they are difficult to deal normally as the profit goods.

It is more easy to maintain the forestry management and the submanagemnt than other industries. In other industries, for instance, it is almost impossible to gain the products and accordingly the profit unless the expenditure is invested, while in the forestry management, the profit can be gained by postponing the payment of expenditure. Besides, generally speaking, a certain profit can be gained in a long period without investment. By these ntures of forestry, the forests can be regarded as not the means of production but the fixed enjoyment goods which render the services every year through holding. And the value of such goods is not merely estimated on economic basis, but can be estimated subjectively by adding the expect of the benefit increase in future.

(4) There are partially the following circumstances that obstruct the enterprise from investment on the forestry.

- a) As one of the characteristics of the forestry, there are pretty large number of the forests in which they cannot wholly engage in pursuing the profit by the restriction of the protection forest or some other reasons stimulated in the laws. Although they do not impose these limitations at present, not a few of them might be imposed that in future.
- b) In case of the transaction of the forest as a property, and of carrying out the profit and loss counting, the current valuation of the forest is needed. But it is hard to estimate this correctly, for the value of the forest is rather low comparing with its area, and varies remarkably with locality. Accordingly, the anxiety sticks to the purchase and the management of the forests.

For those reasons, in the forestry the corporation enterprise is considered not to develop. So that, on the other hand, the particular form of the ownership and management of the national forests and the public forests have their own reasons for existence.

But, in the forestry management, on the other hand, there are some merits that cannot be found in the other business managements.

(1) The yield gained is small comparing with the large area, but if the management is once organized rationally, it does not fail to produce the yield except when it should meet the heavy depression of business. And the management is comparatively simple and it is rarely hindered by the employed labours in comparison with the other business.

(2) The forest which is organized in the management, is useful as the productive means, and besides it supplies the products every year, and it has always its market price as the capital goods themselves. In other words, the growing stock bigger than certain diameters, has its current price which fluctuates with the market price of the forest products, and its value does not be depleted like other fixed capital goods. Accordingly when the price rises, the profit can be gained if necessary by increasing the production. And as long as the ordinary management is carried on, the initial capital can be returned by its dissolution price, even when the corporation faces the deadlock.

So when the management is systematized in the scope that the corporation enterprise can exist, the succession of the corporation enterprise is safe. At the start of the business, the stock-holders will have to stand at the low dividend, but as the time goes on, there is a possibility that the rate of the dividend grows bigger gradually. The market price of the stock will also rise. Because, the tendency of the price rise of the timber just as other real estates, can be expected. But actually there are yet few corporations in the forestry.

II. General classification of the enterprise forms

The enterprise forms are the kinds or forms of the enterprise from the viewpoint of the structure of the enterprise. The classification of the enterprise forms is generally based on the forms by the law, but the forms which are analysed and arranged from by economic consideration are called the economical forms.

In these economical forms, as the original essence of the enterprise lies in the contents of the profit-pursuing and the sharing the risk, as to the former, private or public nature in the enterprise, the stage of the separation of the capital and

management (administration and management), and as to the latter, the number of the investors of the capital (degree of risk distribution), will be questionable. Considering these points, when the forms are classified especially by the nature of the enterprise subject, they are as follows.

1. Private enterprise

A. Single enterprise. The form in the law is individual merchant.

B. Group enterprise.

a. Small-group enterprise.

(i) One in which all of the entrepreneurs are the investors and managers; the partnership, the association in the civil law.

(ii) One in which the mere investors are included; the partnership, limited-liability company, anonymous association.

b. Mass-group enterprise.

(i) One to which the entrepreneurs and the users of the products and services are not identical; corporation.

(ii) One to which the entrepreneurs and the users of the products and services are identical; cooperative.

2. Public enterprise. Public juridical person, public corporation, etc.

3. Public and private cooperative enterprise, Special cooperation.

Among the classifications so far stated, the classification, the nature of which may concern with the forestry management will be further studied.

III. Independent private enterprise

This is the common form in the private forest. And in the timbers business and the management of the sawmilling, this form is actually often found. The entrepreneur invests the whole capital alone, runs the risk himself accordingly, and usually handles all the administration and takes care of the management. The form in which the capital investment, control and management are carried out by entrepreneur himself is called the self-enterprise and direct management from the viewpoint of the management. And in the smaller ownership, the labour is supplied by the family, and this is called the self-management or family-labour management.

In the independent private enterprise of the forestry, the profit and risk are small. And, the difference of the individual activity as the entrepreneurs does not affect the result of the management so distinctly as in the case of the commercial and industrial business. So far as the entrepreneurs keep the fundamental principle of the continuity of the management (maintenance of the property), their managements rarely face the risk even when they do not have the special talents in the management. This also means that there is a little stimulate for the profitpursuing activity. The management scale is almost fixed and its enlargement is made when there is margin in the self-capital, but for the convenience of the management, the scope of the transaction is eventually limited.

Thus, in many cases, the forests are maintained as the property, and are considered the enjoyment goods and are not considered as the monetary capital. Accordingly, though the maintenance of its growing stock is necessary, its relation between the proceeds and profit are not necessarily taken into the consideration.

This is why there are not a few managements or the sub-managements which carry out the production passively based on the principle of complementing the households, maintaining the hereditary management scale. However, it is considered that there is a tendency of the increase of those managements which carry out the production positively based on the principle of income.

IV. Group private enterprise

The enterprise form consisting of more than two persons is called the group enterprise. This is, in other words, called the collective enterprise or association enterprise, and the ordinary unions (associations and co-operations) and the forms of corporation comes under this category.

The group enterprise is divided in the minority-group enterprise and the majority-group enterprise. The minority-group enterprise puts more importance on the collectivity of men than on the capital, and is called the men enterprise. The investors as the extension of the ruling power against the management of the capital, carry on the management control and at the same time, share the function of a part of the management. As the entrepreneurs carry out the whole activity of the enterprise as in the private enterprise, this is the self-enterprise. Accordingly the investors' and at the same time the managers' ability is the basement of the enterprise. The detailed classification on the minority-group enterprise was described previously.

On the contrary, the majority-group enterprise puts the importance on the relation of the capital procurement. This is the form in which the investors and the management control are separated in the economical structure of the enterprise. The investors in a small amount per a time in consideration of dispersing the risk, while the enterprise itself needs the large capital. As a result, there grow many investing entrepreneurs who are included in the enterprise and so the investment and the management control are separated. Of course, there are many cases that some of the investors engage in the management control, but the case that the men who are the managers in the man-enterprise, engage in the management control in the form separated from the capital, comes into existence. As the capital or the materialistic element that is invested by the investors, makes the foundation of the enterprise, this is called the capitalistic or materialistic enterprise. Its detailed classification has been already described.

As the next step, the various forms of the minority-group enterprise concerning the forestry will be stated, but the corporation and the cooperative that are the majority-group enterprise will be explained in separate paragraph.

V. Minority-group private enterprise

1. The partnership

There are around 20 of this form in the field of the forestry in Japan.

All of the entrepreneurs are the investors and are called the partners. This is the juridical person under the control of the civil law. And the risk-sharing in the business is as in the independent enterprise, i.e., unlimited. The partners mostly engage in the management control, but when the business are shared among them, and the man who has a managing ability but not the investing ability, joins in the

partnership by offering his labour as the share of investments, and some of the partners are elected the representing partners (business execution partners) who take care of the management control. In the latter case, the other partner merely share the investments, and only share the risks. The payment of the profit is based on the contract, otherwise, the dividend is shared in accordance with the amount of contribution.

Thus, this form of company makes a great development usually among the father and son, brothers and the relatives. As there are the identity of investment and control, and sharing the joint and unlimited responsibility, the partnership is under the mutual understanding incorporated by a few partners and can make the entrepreneurs who have each different abilities, develop each own merit. And, as the number of the entrepreneurs increases, in respect to the financial ability, the power of investment of the self-capital and of procurement of the outsider's capital becomes bigger than the independent enterprise. On the other hand, because of sharing the unlimited risk, the procurement of the capital is limited to the comparatively narrow scope and the large amount of capital cannot be collected. It especially lacks in the power of credit in the long run.

2. The limited partnership

In the field of the forestry and the sawmilling, more than thirty companies are found in this form. This is the company system that has the status of the juridical person almost same as the partnership. But, in the part of this system, some mere investors are included. This means that the form consists of more than one partner of unlimited responsibility and more than one partner of limited responsibility. The latter partner is the same as the stock-holder in the corporation, and shares the responsibility within the limit of the investing amount and also shares the dividend of the profit, but does not join in the management control. The partner of joint and unlimited responsibility handles the management as a rule, but when there are more than 2, the representing partner can be elected out of them, and the others may be excluded from the management control. In this form of a company, the entrepreneurs who are limited by their investing amount are set up, so that the capital can be collected in the wider scope than in the partnership. But in this form, although it is only concerned with the capital, in the relation between the partner of the limited responsibility and the enterprise, it needs the consent of the all of the partners of unlimited responsibility, that the share should be paid to the partner of limited responsibility whose investing capital is a pretty large amount per each. So that the partners of the limited responsibility make the investments only when they can well trust the partners of unlimited responsibility who engage in business administration. In this respect same as the partnership, the company is established only when the partner can put trust on each other in the view-point of the personality.

The partnership and the limited partnership in the field of the forestry are considered to be established mostly by the owners of comparatively large property for the convenience of the property management such as the prevention of the dividing of the forest by the succession, enjoying the advantage of the large scale management and deduction of the tax. This convenience may be gained by handling

the forests hereditarily. As the management system can be arranged here and the administration is carried out, then the result of the management is not necessarily bad.

3. The limited company

In Japanese forestry, we have one or so of this form. The entrepreneurs i.e. the members share all limited responsibility and there is the limit that the total number of the members should be less than fifty. The member needs to invest and the monetary value of a share of investment needs to be 1,000 Yen. His responsibility is usually limited to the amount of investment. The transfer of member's share of investment needs the special agreement of the members' general meeting. Because the deciding organ of the will is the members, general meeting. The directors who are elected by the members act as the representative of the company and engage in the business administration, and so the members are divided into the two classes of investors and managers.

VI. The corporation

It appears that there are several ten corporations in the forestry field.

The corporation is the form which is adopted when the large amount of fixed capital needs the more monetary capital and the management is carried on more efficiently. This form is most common today to mobilize the capital. The negotiable instrument issued by the corporation under the name of stock, is classified per a certain amount. This face-value becomes the unit of the investing amount. In our country as a rule, the corporation can be established under the provisions of the law that the face-value is more than 50 Yen and one-fourth of the total amount of capital is paid off at the first time. The stock can be sold and transferred by the free will of the holders, and then the capital market may exist, and the contribution may become the investment on profit basis. And, the enterprise itself, becomes very profitable to procure the capital. Besides, the debentures like the shares change into the certificates and they become the debenture certificates. And they are approved for free sale, buying and transfer so that they are useful for the procurement of the long-term capital.

The share-holders are classified in the speculative share holders and investing share-holders. The formers do not aim to join in the business but expect the speculative profit as the short-term investment, while the latter have generally large amount of shares in the enterprise and are interested in the profit of the enterprise. The formers sell and buy the shares in the market at the current prices, so that the detail is not so different from the case that the owners of debentures gain the interest. The latter can also exercise their right of voting by attending the share-holders general meeting, but their chief interests are not in the business, but rather in the current profit sharing. The managers are either the principal share-holders or the expert managers who specialize in the management. Anyway, when the capital grows large, the general investors' power become weak and on the other hand, as the enterprise activity gets complicated in accordance with the growth of the scale, the paid managers of ability=directors who can deal with these circumstances are elected and they carry out the business management. But these managers are apt to pay more importance to their own interest than the profit of

the corporation, as mainly the administrators of the outsiders' properties. For such reason, the supervising organ=the inspector is established against the managers' business execution, and it opens to the public the financial statement (balance sheet, the statement of loss and profit, the inventory and the statement of the disposition of the profit money and etc.) and publish the business result. These are provided in the law.

Although the forestry corporations are increasing in number because it has been easier to establish since the end of the War, but their details are various. But, these are classified roughly as follows.

(1) The form which has the forestry as the subsidiary or though operates the forestry as special, belongs to the other enterprise which carries on the different management, and with which it has a sister concern. When this is classified according to the kind of the concerning corporations, it is shown as;

- a) the corporation enterprise which uses the timbers as raw materials,
- b) the corporation enterprise which depending upon the location and nature of the management, gain the profit by the subsidiary management of the forestry.

(2) The form which specializes in the forestry.

- a) The one which is of the nature of the independent enterprise or the true human enterprise.
- b) The one which is substantially the corporation.

Among these, the forms belonging to the category of a) in (1), are the corporations of sawmilling, pulping, artificial silk, paper-manufacturing, comphor-manufacture, manufacturing of fuels and charcols, ship-building, vehicles, musical instruments and civil-engineering etc.. Among them, the corporation of pulp is the representative and the largest in number. The consumption of raw material is of a vast amount, and it needs to secure the demand always depending upon the raw materials in response to the business fluctuation. Now the policies of the forestry management in these corporations are various, but the principal ones are that, when the timber price is low, they purchase them from outside, and when the price is on the rise and there is no prospect to meet the demand, they make the self-support from their own management and do also the sales of products.

In the b) of (1), as the forms which carry out the subsidiary forestry management as in the favored locality, there are the enterprises concerning the live-stock, power generation, agriculture, pharmacy, hot springs etc.. And as the enterprise takes advantage of its own institutes, there are corporations of railways, ships, transportation, etc.. And the others, are the corporations enterprises concerning the productive industry, trade, real estate etc. so on. The forms of a) in (2) have increased since the end of the War. The main reasons of such increase are that, as in the case of the partnership and the limited partnership, they try to escape the double imposition of the tax, especially of the succession duties and prevent the division of the forest ownership, and try to gain the profit of the administration management. And because in the days of the inflation after the War the necessity of the capital increased. This is another important reason. Accordingly though they are called the corporations, they are the human enterprise or the human-group enterprise substantially.

The corporation of the nature of b) in (2) are now quite few, but these have the substantial contents as the corporation in respect to their capitals and loss and profit counting, the management control and administrative system and the stock-holders. These forms used to get their capitals in the other father company, but it became the independent forestry corporation since the juridical action of the elimination of the concentration of the enterprise after the War. So that among these, there are some which have some relation with the former father company. And some of them have been re-united again. Among these, there are some which own the rich forests and carry out the subsidiary management of the sawmilling and whose achievements of the management are successful.

VII. The cooperative

1. The significance and the form of the cooperative

The cooperative is the enterprise in which number of the members is not fixed, and is mostly established to use the services as the products and facilities for the benefit of members. The consisting members are some what economical inferiorers, and they need the special help for the corporative activity in order to expect the satisfactory development of the society. The cooperatives are roughly classified in the production cooperative which gives assistance to the profit of the production and the consumption cooperative which assists the consumption. The former concerns with forestry.

This is established by the medium and small scale producers who on the principle of complementing the households, follow the traditional practice and only depend on the local market with the small capital, for the purpose of protecting the economical benefit by the joint-execution of the whole or a part of their economic activities, in resistance against the merchants who derive their profits by operating the market economy. The reason of its existence is to secure the economical position in resistance against the pressure of the large capital, so that its fundamental spirit is the common-benefit, in other words the cooperative principle but not the profit. Its means is to supply the benefit of production, buying, selling, and finance to its members. But there is a possibility that the cooperative itself has its independent management and is one kind of enterprise form.

The production cooperative is generally classified in the three types.

(1) One which assists the members' economy. The members own the cooperative and at the same time purchase materials and sell the products through it. The cooperative of this nature can be classified in the several forms, but their characteristics are the combination of the business done through the cooperative, based on the independence of the members' management.

(2) Productive cooperative. This is the cooperative of the members' joint investments, and establishes the facilities such as the factory, warehouses and roads, and with the use of these facilities, processing, storing, transportation and supply of raw materials of the members' products are carried out. These can be divided into several forms, but the characteristic lies in the united business of members.

(3) The production cooperative. This is the amalgamated production economy through the suspension of the independent production of members. Through this cooperative, they gain the benefit of the large scale production as stated later.

The associates are the entrepreneurs and at the same time the labourers. This is the system in which the possession of the management and labour are united, and is the united body of the business.

These cooperatives of various kinds desire not only to eliminate the commercial profit but to increase the yield.

2. The kind of the forestry cooperative.

The forestry cooperative is the production cooperative whose purpose is to rationalize the small sized private forestry. The new post-war forest law provides the system of the free establishment of the cooperative and the voluntary membership and the cooperative is classified in the following two kinds.

(1) The facilities cooperative carries out the instruction on management, consigned management, and the incidental business for the members. This cooperative belongs to the category of (1) and (2) of the three cooperatives already described.

The ownership and the management of the forest are in the hands of members and so far as the delegation and trust business are concerned, the cooperative undertakes its management. The members consist of the forest owners and the forestry labourers who take advantage of the cooperative facilities (sub-member). The businesses of the cooperative include a part or the whole of purchasing selling, assistance in production, credit, production business, collective bargaining and so on. Although the business expense is shared by the members, in order to carry out the trust business, it is required to become the contribution cooperative as provided in the law.

(2) The production cooperative

This cooperative carries out the forestry management and its incidental business and comes under the category of (3) the cooperative. These are all contribution cooperative. The members consist of the residents within the district and the owners living outside the village. They invest the right of the forest, and the risk sharing is within the limit of the investment. The transfer of its right needs the approval of the cooperative.

Here the elected chairman of the board of directors engages in the management control. In this form, it can take benefits of the large scale production in the management, but when this cooperative is to be newly established, generally owners are not willing to lose their right of management. When the village or community owned forest are changed to this form, such cooperative can be established.

In either of the forest cooperatives, it is required to publish the financial statements to the members and to classify the details of the assets, but they are still far beyond the best use of this regulation and do not attain any success yet.

(3) The question of the forest cooperative.

The number of the forest cooperative after the War is as many as before the War. But it is said that most of cooperatives are not satisfactory as before the War. It may be considered that there are the reasons which are common in the cooperatives and specific to the forest cooperative.

i As pointed out by Liefman before, there is some limits for the general nature of the cooperative, but the reason why the production cooperative on small scale failed is as follows.

(A) The shortage of the capital. Because the people who have the sufficient capital and are able to carry on the production for themselves do not like to have their wills of operating capitals restricted as the result of delegating them to the production cooperative.

(B) The lack of the subordinate relations. Because so long as the number of the members is not extremely small, most of the members need to follow the minority's direction.

(C) The lack of the proper leadership. Because there are not so many people who can direct the large-scale management. In other words, such people can carry it out, can be independent and gain more incomes as the leader of the company enterprise.

These points of view can also be applied to the forestry cooperative.

ii As the circumstances are particular to the forest cooperative, the followings are considered.

(A) The forest owners are not conscious of their being economically inferiors in the common sense. There is not the competition between the same forestry management nor the strict confrontation against the supply industries and the demand industries. There are many who are willing to use the nature of forest as the enjoyment property.

(B) The sub-management, the small forest owners, in other words mostly do stumpage sales, and their amount of business is small. And there is long terms of intermission as to do the business like the afforestation. Thus, even when there is somewhat a profit in the cooperative as a whole, these people do not feel it. These two circumstances don't make the forest owners feel the necessity of the joint-management in the ordinary time.

(C) As the yield from the forest is small on the average, the sharing ability is also small. Accordingly it is originally hard to establish the powerful cooperative organ within the district where the forest area is small and the value of the forest is low.

In spite of these hindrances, why many cooperatives kept their existences until the end of the War is that they were strongly supported by the national policy and the system of compulsory membership and compulsory establishment was provided. After the War, by the revision of the forest law, the system of the optional establishment and membership was adopted, but still many cooperative are maintained. It can not be then overlooked that the national policy still substantially supports them.

The cooperative has its reason of existence when more earnings are brought into the members so long as the cooperative exists than when it does not exist. When the member feels that when his burden rather increases because of membership, he will not be glad to join in the cooperative. The principles of the cost compensation for the member is working as the business of the cooperative as the whole. When the increase of the earnings for the member is justly attained by the principle of the economic cooperation, this cooperative has truly the significance of existence. In this sense, the economic business of the cooperative for a long period, is to be controlled naturally by the scale of the effective business and in accordance with it the scale of the administrative organ will be applied. But in

that case it may be the question that the necessary capital for the joint-business is likely to be short. The forestry in its nature almost always needs such investment to increase the productivity. But the members are not satisfied with such investment. This owes to the little margin for investment. Owing to such reasons, the cooperative always stays in the smaller form than the rational business amount of the cooperative and the scale of the administrative organ. Furthermore owing to such reasons, it can fairly happen that the efficiency of the cooperative can not be attained. There will be some room for the national assistance to the forestry. In addition following circumstances is considered as the reasons for the maintenance of the cooperative.

(1) In order to promote the rationalization of the management as the objective of the cooperative. The forest owners follow tradition and lack in the knowledge of the forestry, so that many of them make mistake sometimes in choosing the necessary time and means for the work and lose the present and future production and yield. This is a loss for the national economy also. These facts can be considered on from both sides of technique and economy, and the usefulness of the administrative organ of the cooperative as their advisory organs cannot be disregarded. In such a case, it is in the future when the nature of the forestry production brings about the result of the present investment. And it requires usually long time to get the owner's satisfaction. This is why the administrator's ability to raise the rationalization of management is desirable to evade misleading.

(2) By better understanding among members to promote the satisfactory development of forestry in rural community. In rural society there are many localities where the people stick to the traditional forestry practice, and the production does not develop at all, and as a result neither the employment nor the income does increase. And in forestry, as the delayed payment is accepted, it happens that the employment decreases by the circumstances of the owner's domestic economy, especially in the business depression. It is desirable that the administrative organ urges usually the members realization and co-operation in order to stand against these circumstances, and to increase the present and future income and employment by the advancement of the forest productivity.

These two points are mostly hoped to be realized for the development of the forestry management and rural economy, but its perfect realization is pretty difficult, and it needs a long time to reach the goal. But, although the sufficient realization is by no means easy, the necessity of the rational and sound fostering and managing of the forest cooperative as one of the means that has the possibility to realize this, would be taken into consideration.

VIII. Public enterprise

1. The significance and form of the public enterprise

The public enterprise is the economic business organ that is invested wholly or partly, owned and managed by the public organization such as the national government and the local autonomy.

The interpretation of the public enterprise has both wide and narrow one but here it is understood the economic business organization and its reason of existence

is that “there lies the public nature which cannot be found in the profit nature of the private enterprise”.

When the kinds of the public enterprises are divided by the degree of separation from the restrictions of the national or the public administration, finance and politics, and by the ways of contribution and administrative forms, they are as follows.

- (1) The pure administrative management
- (2) The public enterprise
 - (A) Non-subsidiary public enterprise
 - (B) Independent public enterprise
 - (a) Public enterprise as the independent economy
 - (b) Public enterprise in the form of private law.

The pure administrative management is also called the pure administrative enterprise and its management is completely subordinate to the national or the public organization. Accordingly, as the general administrative organ, the business activity is carried out following the administrative laws. All of the credits and debts that come from the business belong to the national or the public organization and the property is not separated and independent. The decision of the will on the business is based on the order of the national or the public organization. The accounting of the business is wholly restricted by the budget in accordance with the accounting law. So that the business activity becomes inflexible and inelastic, and it lacks in the positivism. In strict meaning, it can not be called the public enterprise.

Although the unsubsidary public enterprise is like the pure administrative management a part or an organ of the administrative system, it tries to be free from the restriction of the administration, finance and the diet as much as possible for the purpose of eliminating the defect of the pure administrative management. This is also called the autonomous public enterprise. This is independent as far as its system in the field of the business accounts is concerned though it is of non-independence in legal sense. In other words, for the purpose of making the finance account independent of the general account and its revenue and expenditure clear, the system of the special account or special budget is adopted. But this is still the partial independence and is influenced politically by the administrative organ in the other fields. Namely, it is managed as a part of the administrative systems, and has the same system as the ordinary administrative offices. This administrative system is convenient for carrying on the administrative works but is said to be improper for the system to handle the economic activity. This is the system to give orders and supervise, and it requires surety more than alacrity. Accordingly it is the system where the evolutionary and creative ideas can not be displayed.

The independent public enterprise is the enterprise system that becomes independent of the administrative structure for the purpose of eliminating the systematic defect of the unsubsidary public enterprise. But this does not mean the commercial private enterprise system, but means the independent form as the enterprise. In this form, the perfect autonomous right is approved by the special law, and the administration and management are separated in the structure, and accordingly the finance is independent. In its form, this is divided into (a) the

form of the special public juridical person and (b) the company form of the private law. In the former, there are so called public enterprise organs based on the provisions approved by the national government and the special law, such as the public bureau, business body, coffers, and there is the form of the corporation in the latter.

The public enterprise in forestry can be found in the national and public forests. The national forest used to be of the pure administrative management, but it changed into the unsubsidary public enterprise since enforcement of the special account system of the national forests in April, 1947. Most of the metropolitan, county, district, and prefecture owned forests and city, town and village owned forests are of the pure administrative management and there are some which are of the unsubsidary enterprise.

2. The significance of the public enterprise in the forestry

In forestry, there are many countries where at least the part of its forests are put under the public enterprise, especially the government operated enterprise. The reason is that importance is placed according to times and the country concerned. But in general the followings are summarized reasons. They are, the circumstances, the financial necessity, promotion of the public benefit, encouragement of the development of industries, etc.

Today, the chief reason of existence of the public enterprise in the forestry is that it is necessary for the development and stabilization of the national economy. Or it has the significance of existence within its necessary limit. These reasons are to be considered as follows.

(1) The necessity for the forest products supply.

The demand forest products along with the progress of the national economy increases remarkably, but on the other hand, of the forestry production could not keep pace with it. As a result, the growing stock in the country decreases generally both in quantity and quality, and its productivity is going toward decrease. Taking consideration of the future progress of the industries, the quality of the timber demand may somewhat change, but the quantity of demand itself will still trace the tendency to increase. In that case, as the low productivity of the forestry cannot keep pace with the other industries, it may obstruct the progress of other industries and it makes a crevice in its own industrial system. In order to increase the productivity of the forestry in such circumstances, it is necessary from now on to do the rational management to meet the future demand increase especially in the district of the inaccessible forests. This cannot be carried out by the private forestry because of the vast amount of the long term capital investment and its interest. The national forestry can only execute this directly to attain the objective.

(2) In the forestry, we have many instances that social and private marginal net products as pointed out by Pigou are not identical. This means the case where the result of the production is a benefit for the individual but not so much a social benefit, rather a loss. For instance, in the forest district where the protection function is large, increased harvesting is beneficial for its management, but as the result of the reckless felling erosion is brought out in the lower watershed area. Such forests are mostly found in the headwater area or in the degrade base-rock

area likely to erode. The significance of the public enterprise tells the necessity of the management taking consideration of the influence to such a local economy.

(3) During the progress of capitalism to the monopolistic regime, the overproduction and chronic unemployment appear. In Japan, the scarcity of capital is still prevailing, and potential unemployment are always found in rural community. The business depression in foreign countries such as U. S. A. will strongly influence upon the Japanese economy. Therefore, the public investment is needed for the purpose of development of the productivity to meet present and future undesirable condition, and in this respect, the public enterprise has been regarded important. In this sense the public enterprise in forestry contributes to increase employment and forest productivity for which the existence of public enterprise may well be valued as to function the process of successive enlarging reproduction in rural community. And in this public enterprise, the maintenance of the local lumber manufactures and their increase and stabilization of employment can be attained by the way of controlling its amount of supply and its price.

Of course, it is not impossible in the form of the private enterprise to solve it by the policy such as the national supervision and economical assistance. It is clearly for this purpose that the present forest law regulates the protection forest system, forest planning system, forest extension system and the subsidies of various kinds. And the private forests which are beneficial in their condition of the economical location, can take the means positively in a certain degree to meet the future demand increase of the forest products while pursuing their economic ends. In such way, they can also meet the requirement based on the national economy so far described.

Even in these cases, however, it cannot be denied that the surer way is to promote this solution by establishing the public enterprise at the same time. It can attain its direct object efficiently for itself. It is especially so in the case where the large capital is needed and the loss or the cost compensation management in a pretty long period is acknowledged necessary for the present and future of the national economy. And it can be considered that there are large areas where the productivity and the amount of supply can be increased by displaying the benefit of the large scale management on establishing forestroads, uses of machines, rational administration and techniques. In such areas as these, the public enterprise can display its merit with its power of capital.

And, in the view point based on the common sense, the defect of the public enterprise, the inelasticity of management does not appear so remarkably in the forestry as in other industries. Because, in the forestry management, it is necessary to aim the increase of productivity while maintaining the real thing capital, and in the public enterprise especially, the maintenance and improvement of both real thing capital and productivity at the same time are needed, and in carrying out the administrative system based on this point of view the special case-serving elasticity is not needed and besides, as to its system, its rationalization can be in a fairly large grade public enterprise. In this sense on the contrary the management that is too enterprising is apt to face a danger.

But, the public enterprise also has its reason of existence when its existence

can give the national economy the bigger benefit than when it does not exist. So on this point, the consideration and reflexion should be paid as it is the public enterprise.

3. The nature of forest proper for the public enterprise.

The forests that are managed by the public enterprise have the historical background for their formation and have the portions of various natures, so that in order to understanding them, emphasis is placed on other point in accordance with the change of the social and economical conditions of each period. To understand its meaning, additions will be needed in the future. But, from the above description, the writer states on the kind of the forest that is considered proper to be managed by the public enterprise under the present economic system. In the preceding two parts, the description has been made chiefly about the national forests, but here the description is given about the form which includes the public forest at the same time.

- (1) One which is originally made to belong to the public enterprise.
 - (a) The forest which is necessary to be maintained for the public benefit; various kinds of protection forests, recreational forests, water reservoir forest, etc.
 - (b) The forest which cannot expect the rational management in the private enterprise inaccessible forests and some similar forests.
 - (c) The forest which assists and promotes the development of the local forestry; demonstration forest, experimental forest, etc.
 - (d) The unsuitable forest for the individual use, but for social use from the view-point of the public benefit; common forest.

- (2) One which is needed by the nation or the local public group itself.
The forest is needed for the financial revenue.

- (3) One which needs the public enterprise at the same time.

- (a) The forests which are necessary for the control of demand and supply of the forest products.

The production forests of the big diameter timbers and precious timbers that have the worldly tendency of decrease, and are hard to produce in the private forestry because of the relation of the price and production cost, but will be demanded also in the future by the national and world economy.

- (b) The forests which are necessary for the social policy.

One which is preferable to be managed by the public enterprise in order to maintain and increase the local income in the district of the pure mountain village.

- (c) The forest in the district that needs the prompt capital investment to meet the increased demand of the local and national economy.

4. The form of the public enterprise in Japanese forestry.

- (1) The national forest

The forest owned and managed by the government, and the forest land owned by the government and where the business is carried on by the official and civilian co-operation, are included in this category. There are the national forest in so-called narrow definition which belongs to the administration of the Minister of Agriculture

and Forestry, as the national benefit property stated in the Law of the National Forests, and the other national forest for which the same law is not applicable, the school forest, the forest land for the use of the prison and the railway protection forest, which are the forests for the use of each ministry. The latter forest usually does not carry out the production management and is regarded as the so-called public establishment. This is the government undertaking in nature whose purpose is not the production benefit itself, and it is the scarcity management and its whole real cost is paid by the state. The Imperial forests were formerly separated from the others in the previous laws, but they have been included in the national forests in the administration of the Ministry of Agriculture and Forest in April, 1947, together with those under the administration of the Hokkaido prefectural government. The realization of the national forests in narrow definition owes its origin to the return to state of the forests belonged to the feudal government and the local land lord in the period of the beginning of Meiji, and the turnings-in of the shrine and temple forests.

This national forest in the narrow definition occupies the 34% of the whole forest area in Japan and 43% of the whole growing stocks, and so its influence of the management efficiency on the national economy is great. "As much contribution to the public welfare as possible should be made by its existence, and the sound progress of the management must be also done to eliminate unnecessary cost as much as possible". In order to meet this purpose, the self-supporting accounting system has been applied since 1947. Its administrative organ has been reorganized, and the bureau of forestry as the outer organ of the Ministry of Agriculture and Forestry handles wholly all the management control under the direction of its minister. The bureau of forestry is the central organ, and there are the local agencies such as the supervision (regional forest-office) and the execution (district forest-office).

(2) The public forest.

There are in this category, such forests belonging to the local public entities as prefectural forests, city, town and village forests and community forests. These were mostly the common forest in the period of Tokugawa. Since the beginning of Meiji, they were chiefly turned into the town, village and community forests after the registration of the transfer of the land ownership.

Among these public forests, some of the prefectural forests, and city, town and village forests are well controlled administratively, and show the nature of the public enterprise. In many of these cases, the form of the pure administrative management is adopted and there are some that have the form of the unsubsidary public enterprise. A part of the city, town and village forests and a pretty many parts of the community forests are mostly used for the self-supplying harvest of the natural resources and many of those cannot be called the public enterprise. In such place as these, the forests are handled as the outer enclosure of the agriculture in accordance with the principle of farmer's economy to complement the house-holding or the principle of occupation. Or in other way, the community co-operating principle restricts the residents mutual capital investment however there are rooms in the forest area. But, there are such cases as that by establishment of the super-ficies, and the afforestation is carried on by divided loaning to the local people, and

they make the afforestation jointly and its yield is offered to the public work only within the community, and furthermore, they are shifting to the forest production cooperative principally for the community or the town or village.

IX. The public and private corporate enterprise

This is the enterprise which is carried on by the nation or the public body and private person with cooperation of the capital and the management. Generally the nation and the public body take care of the investment and management control. The purpose of control is to restrict the profit for the public benefit. The remarkable example is seen in the case that in 1926 the Austrian national forest was made the economical juridical person of Germany and it was managed in the form of the corporation, and the case of the pre-war exploitation corporation of the Korean forestry and the Sakhalin exploitation which was established in early years of Showa in Japan. In this system, while the national capital is taken advantage of, the civilians' skills are available. And, the restriction of the profit and the public benefit are to be attained to keep aloof from the low efficiency of the government business. And, it is added that this form is, from the viewpoint of the nature of the government's enterprise control, the independent public enterprise in the form of the private law described in the preceding paragraph.

Chapter 4. The Various Forms Based on the Subsidiary Nature of the Forestry Management

I. The foundation of the classification

For the convenience of understanding, let us now suppose that an entrepreneur makes up his mind to do the forestry management in the form of corporation. This entrepreneur collects the capital in the capital market, and establishes the corporation by gaining the outsider's capital based on the many investors and the issue of debentures and looks for the land and forest together with the corporators. When fortunately he can rent the forest land of the large area and the stumpage on it, he does the production by controlling the management, arranging the management to produce as much profit as possible, establishing the production plan, constructing the forest roads, renting the machine and something like these, and by using the employed labours. And, out of the proceeds, he pays for the administration cost, wage, land rent stumpage and machine, depreciation cost for the forest roads, and outsider's capital interest, and then out of the surplus money, the total profit, he distributes the dividend to the investors, and holds a portion of it and gains the amount left as the entrepreneur's profit. In this case, if the loan of the stumpage is said not to exist, it may as well be made as being purchased. In that case, the amount of initial capital increases, and the rent for the stumpage becomes unnecessary, but while on the other hand, the payment for the outsider's capital and the dividend increase.

Such a management form as this is the form of the capitalist's production which does the commodity production as the historical economic form. Viewing from its economic object, it is the form of the commercial economy pursuing the profit, and viewing from the enterprise form again, it belongs to the majority group enterprise

in the category of the private enterprise, but it has the different nature from the cooperative. About the explanations on these points were made in Chapters 2 and 3.

In this way, the relations of motive, object, contribution, ownership, management and control show the characters of system and production. Of course, in case that it is started from the same forest structure, it does not always show the different appearances, but in the long period, there arises various differences in the structure of the management body.

Incidentally, in this chapter, the form of management is classified from the view-point of the difference in the main natures that are shown in the management body and during its operation.

But, the chief nature of the management, in other word the subsidiary nature, may be of the various kinds on how handle it. In that case, as is found in the forestry, the classification by nature based on the forest itself and the various technical nature has been widely used. For instance, the difference of the species, site-quality, and the difference of the working, regeneration, afforestation and silvicultural method and the final age influence the structure of the forest to a great degree. So these can constitute the foundation of the classification.

But in this treatise, the subsidiary nature of the management is treated as the problem of the study of management. We do not treat the nature of the techniques itself which effects the forest, but we treat the nature as the subsidiary nature of management which can be included in the structure of the management. In more concrete speaking, the forestry management body is the materialistic system consisting of land, growing stock, roads and other capital goods and systematic body that is the administrative organ in the large scale management and the human system consisting of one manager in the small scale. And the production is carried on by supplying seeds, seedlings, domestic labour and employed labour to gain the products. This is also the capital constituting body in which the value always moves through the process of production. The management body is organically held as the capital constituting body in which the value always circulates whether the valuation is actually made or not, and the management body can always be considered to be of uniformity by understanding it as the organic body of value circulation. Now the nature which affects the uniform system body in this sense and can indicate its structural characteristic, is stated here.

Incidentally, even in the subsidiary nature of the management of this meaning, the way of handling it is not always definite. For instance, the means to pursue and classify the nature of the system and administration in detail, can be considered, but perhaps its result will be discuss on the chief part of the forestry management. So that the means of classification here is to choose some of these subsidiary natures which are considered to give great characters especially to the structure of the forestry management and to classify based on these respects.

The management is divided, besides the kind of the products, the object of production, in the three parts, which are the sale of the products, production and the system. And based on this division, their subsidiary natures can be studied. These three parts are the mere formal sections and are always united by the management that is the production economy. So that the subsidiary nature in these

parts has its significance showing its character on the management production. Firstly, as to the kinds of products, the kind of the production form which needs the sections in respect to the management production, and the character of its production will be shown. Then in the part of disposition it will be described that difference appears in the kind of products and combination of its production place in relation to those three means of disposition that are self-supply, sales and order. In the part of production, besides the classification based on the production techniques, the character arising from the combination of the products will be discussed. Then in the part of system, the classification will be made in relation to the nature of the human system viewed mainly from the administration system, and the continuity of production which affects the materialistic system (degree of maintaining capital). And the foundation of these classification is not merely to state about the structure of materialistic system, but to understand the nature of the forestry management that is the value circulation body arising from the capital and the profit and loss.

II. The classification by the kind of the products

Statement proceeds to the difference of the products in the period and means of the production.

The products in the forestry management can be accompanied with the service that is the protection action, but as the management economy, the forest products become the direct objective good. This forest product consists mainly of the timbers, and besides that it includes usually some by-products, and it sometime consists of mainly special forest products. As the kind of use of the timber, which is handled by the forestry management in the process of its organic production, the following classification will be enough.

- (I) Timber production
 - (a) The material for the industrial uses
 - (b) The material for the textile industry
- (II) Fuel material production
- (III) The forest products other than timbers and fuel woods (special forest products)
- (IV) Mixed production of various forest
- (V) Mixed production of the forest products with others

These kinds give each significance to the production method and bring forth various forms to the structure of the forests. Most of the timber production management are started from the afforestation, and as its production period (final age) is long, the capital investment and the frozen assets to the management become larger. In comparison with the following form of the fuelwood production, the land productivity is large, and the controll of the expense is in a certain degree possible in accordance with the yield amount and also the net yield amount per unit area can be made large, so that this form has been widely adopted in the management as the market production of the timber is general.

In case that most timbers for construction, civil engineering, and electric poles are generally conifers, especially the sugi, hinoki, and pine and its production period is long in comparison with others. This is why the period that the property

amount expressed in growing stock is long and as the results, the precautionary motive is easy to be added. Although the broad-leaved tree is used for the sleepers, furnitures and the plywood, the final age in this case becomes further longer. But, as the broad-leaved forest is lower in its land productivity than the coniferous forest, and the room to increase it by the capital is narrow, there is a few managements which make it their main production object.

In the industrial timber production, in case the pit props production the final age of the conifers, mainly pine becomes much shorter. The same can be applied to the production of the textile materials for pulping. And in this case, the specified demand for the diameter class is not found and the timbers of small diameter meets this purpose. And the period of the maximum land productivity of the pine forest—the greatest volume—comes comparatively early, so that as a result, the production period is shorter.

In the fuel-wood production, especially in the production of charcoal the broad-leaved forest is chosen. It is so called the coppice-forest or sprout-forest. The broad-leaved tree is easy for its natural regeneration by shoots and the species beneficial for the afforestation is limited, and there is no remarkable difference of land productivity between the two working, so that the former method is generally taken. In comparison with the timber production the land productivity is low, and the room to increase it by the assistance of the capital is narrow, so that the amount of yield is provided in the low. But this form is preferable in the small scale management and sub-management because of its nature that the capital, especially the monetary capital is almost unnecessary the production period is short, and the number of income receipt in a certain period is often, and that the total amount of income is easy to increase by taking the production form combined with the inorganic production process.

Generally speaking, the area of the saw timber forest has a tendency of the gradual increase in comparison with of the fuel wood forest. This is because, as the management for the market production increases, more cases happen to show that the yield becomes large, even though the final age of the saw timber forest is longer. Among these, the afforestation area of the sugi is remarkably increasing, because its fast growth, higher harvest in the same period though the afforestation cost is more than other species, and wide uses, and timber high price. Pine, hinoki and larch follow this. In the fuel wood forest, the species suitable for the charcoal production with fast growth, are preferred, but the species other than kunugi (*Quercus Serrata*) and oak are not so much planted.

The special forest products other than saw timbers and fuel woods are the bamboos, lacquer, paulonia, gall, bark, resin, camphor, chestnut, walnut, pecan, and so on. The specific method of harvesting and cultivating to meet each product is taken.

Mostly in the forestry, some kinds of the products are supplied jointly together. (1) Single supply (for instance, coppice-forest) (2) Single production, with the combined supply of the several products.—In general saw timber-forest, it supplies dimension and industrial timbers, and fuel wood, barks, and resin, etc. in final cutting and for pulp and scaffoldings in thinnings (3) Combined production of

various products. In case of the coppice with standard, and some selection-cutting, the combined production of several kinds of the forest products is done from the beginning. The same thing can be applied to the working of the mixed forest of the conifer and broad-leaved species.

Besides these, in natural forest, the products are usually divided in the several kinds in accordance with the composition of the forest, and even when the principal object of the production is other than saw timber, the fuel woods besides the barks can be gained as found in the forest of *Quercus Serrata*.

Now the mixed production with other products than the forest products means that in the forestry management there are joint-use grass land, livestock field and the soil and stone collection land, and the managed production in such instances is jointly carried out.

III. The classification by the disposing means of the forest products

The author states in this section on the characteristics found in the forest production such as the choice and combination of the products by the difference of the disposing means of the forest products.

When the production forms are classified by the difference of the disposing means, the following three kinds are considered.

- (1) Self-supplying production
- (2) Market production
- (3) Production on order

The self-supplying production is to make the fuel woods and the forest by-product for the domestic use to be for complementing the household economy, and is to gain the fertilizer and fodders for the farming. In this production, although the forest land productivity is generally low, but these products are the indispensable goods for lives and for the management, so that in case where common forest does not exist, these are naturally self-produced and even in case where it exists, some of these are also self-produced. But as the production value is low, not so much capital is invested except in case of the reserved forest for the domestic use. And in most cases, these goods are produced incidental to the forest of the other market production form.

The next form of market production is in common today. In various production steps through the national economy, the timber has various use. Besides as the materials which are used for the consumption good directly like the fuels, they are used as the production goods possible to produce the raw materials or materials, through several production process of the various consumption goods. So the timber demand and the price change from time to time. For this reason, the managers who carry out the market production have interests in demand and price of each species and grades.

Now in the managements other than the forestry as the production period is short, it is possible to increase the production of the particular kind when its price rises. But such a means cannot be applied in the process of organic timber production. It is one of the characteristics of the forestry and this production process itself is separated and fixed from the change of the current demand circumstances. This is why the caution is paid in choosing the profitable species in future prospect

at the time of afforestation. And, when it is once planted and it forms a forest the species cannot be changed.

The reason why the price of the timber and accordingly the yield can be somewhat increased in spite of the preceding circumstances, is that the producers can take advantage of the nature of the combined supply stated previously. Even when the same business is carried on with the single species, there are rooms to choice at the time of harvest for grader and so on. So that the beneficial cutting practice can be adopted.

In the market production, the effort is sometimes made to alleviate this fixed forestry production. This is found especially in the large scale and the accessibly located management. In the management and the sub-management in the accessible locality, the various products have their own higher price. So it is preferred that in order to supply the products at high price, the combined production with the species and management practice is considered for future at the beginning of the regeneration. And in the large scale management, in order to gain the high efficiency of labour, the structure of the single production is likely to be adopted in each unit of the stands which is suitable for the condition of the natural locality. But for the management as the whole, the structure of production is apt to be the combined various production pattern.

In the form of the production on order, the kind of the products is clear in a certain degree from the beginning. The forestry corporation having the special relation with the demand corporation of the products and established to supply the particular products is an instance in this respect. And, although its scale is generally small, when the owner of the coppice-forest carries on the production on order to manufacture char-coal, is also in this category. The management of this kind is to produce on order substantially, and is classified from that of market production. If the combined production in the forestry management found in market production, is called the horizontal combined production. This is called the vertical combined production in the sense of extension of the production process. In the management of this kind, there is the one which only the forestry department is independent, (single management), and the other which combines completely with the second process of the manufacturing or consumption goods production, (compound management). In either of these cases, the production concerning these includes the log production, sawmilling, charcoal manufacturing or resin collection, pulping, plywood production and shipbuilding, etc.

In the form of self-supplying production, the necessary products have been produced and collected at the possible cheapest prices. It is especially so when there is room in the forest land, and frequently only so-called natural crops are collected. But when the market production is widely carried out, it raises up the value in the forest land and the part of the self-supplying production is influenced accordingly. And, as its district area is limited, the value of the labour invested there is accordingly considered. But as the fundamental principle, the self-supplying production will be carried on so long as the cost of the labour to collect it is lower than the purchasing price of that product.

The form of the market production is today widely adopted to complement the

household economy. Even if it is originated from the interest in the price of the forest products at the beginning, the relation with the cost is to be considered as the production is carried on. The forms that are close to the production of the income principle and profit-pursuing economical form appear.

In the form of the production on order, it has the foundation of establishment provided that the cost is admittedly to be compensated when the related concern is the pulp company. And furthermore when it is combined with the consumer industry, not only the elimination of the intermediary profit but the saving of the production cost by the internal economics can be made by the mutual application of capital and organization. But in the latter case, the efficiency is not always equal, for it depends on which production takes the leadership of the combined production management. Generally speaking, when the management of different kind includes the forestry management because of the necessity of the raw materials, it is likely to succeed because the power of capital. But when the forestry management takes the leadership and carries out the logging and sawmilling at the same-time, though such case is likely to happen in the time of inflation, often results in the failure because of the lack of knowledge in the economy of processing business.

IV. The classification by the purpose of the forest land

As the extension of the classification by the disposing means of the forest products, the classification by the purpose of the forest land is as followings.

- (I) The forest land for the social and public purpose
- (II) The forest land for the purpose of the marketing production
- (III) The forest land for the purpose of complementing the household economy
- (IV) The forest land for the purpose of the management production

The natural site condition has a strong influence on the foundation of this classification. The forest land for the social and public purpose means the forest land that is restricted in its operation by the laws as the protection forest, national park, although it has the right of ownership of the forest and the formal management, and that those voluntary operation is substantially restricted by the special custom for the use of the products such as the system of "the rights of common".

The forest land for the purpose of the sales production means the one which carries out the production for selling the forest products and now covers the wide area of the forests. Here the purpose is to acquire the incomes, so that the forestry has the motive to carry out the rational management from the economical point of view.

The forest land for the purpose of the economy to complement the house-hold is the one which tries to gain the fuel woods for the domestic use and the by-products of the forest. As the amount necessary for the house-hold economy can be gained more easily than purchasing a pretty large area of the farming village is reserved for this object. Most of the community forests are of the nature of the social and public interest for the community, but for the farmers who use them, they are regarded as for the complementing house-hold economy or for the management production. In the forest land for such purpose, its duty is well done when the annual demand is met. So it is unnecessary to separate a given forest area from others from the view point of the forest structure and the local custom of harvesting

the forest products.

The forest land for the purpose of the management production means the case in which the grass and leaves for the fertilizer for farms, other materials, the fodder grass and leaves for the livestock and the fuel-woods for the sericulture. The value of these products is included in that of the agricultural products and stock farming products, and it is not clear usually as its own value. But the annual demand for these products is almost constant usually.

In the forests of such kinds as so far stated, each different use of the forest land and each practice of management are applied according to the management object and the kind of the products to harvest. Among these, the forest for the purpose of complementing the household economy together with that for the management production is called the forest for the agricultural use or usually the farm forest.

The kind of the species, grade of products chosen in accordance with the production object of the management are controlled by the site condition and the present forest type, but in the long run, the kind which meets the production object comes to be adopted. For instance, in the protection forest, in order to maintain the forest property for the purpose of the social and public benefit at first, tree species which is suitable for the natural condition, is selected and the tree grade is of the second significance. In the case of the purpose for the sales production species and grades which are in great demand and bring large income are selected. And mostly the favorable location is considered. When the sales production is the object, the area of the saw timber forest is larger and when there is spare in the fuel wood forest area and the domestic labour, and the income is low, the area of the coppice-forest is larger where rotation is short and charcoal production is available.

In organizing the management, the forest for the purpose of complementing the household economy and the management production regulates its area according to each necessity. But it is not so subtle in the choice of the species and grade as in the case of the sales purpose. It is especially so when there is room in the management area. And it is mostly either to collect the natural products in unfavorable condition or to depend on the combined production in the forest where the sales production is carried out. But too unfavorable area cannot be chosen out because the investment of labour becomes large in the ordinary times. And when in the small scale management and sub-management, the various demands for the use of sales, house-hold economy and management production are to complement together, the selective cutting is adopted.

Any way it is necessary to consider about the rational combination of the various forest lands. Although the forest land for the purpose of complementing the household economy and the management production does not profit, the labour is invested every year. And on the other hand, the forest land for the use of the sales production brings forth the revenue, but particularly in case of the saw timber forest, the investment of labour is intermittent.

V. The classification by the production techniques

The techniques used in the forestry management are the organic and inorganic.

The organic technique is the technique which is useful for the increase of the direct yield and proceeds, in other words, the technique concerning the afforestation and tending. The inorganic technique is also called the mechanical technique. It does not concern the increase of the direct production yield, but it raises the efficiency in the inorganic production process. And by saving the cost, it is useful indirectly for the increase of the yield in the forest production. For instance the techniques concerning the logging, skidding, and hauling, sawmilling and charcoal manufacturing, and construction of the forest road, are included. Incidentally, the technique of thinning and selective cutting is inorganic itself, but in the sense that it is useful for the growth promotion of the left standing-crop, it is the same as the technique of improvement cutting, the organic technique,

When the classification is made by the principal nature from the view-point that the technique acts on the economic management, the following three kinds are chosen.

- (I) land use technique
- (II) labour use technique
- (III) capital use technique

The technique of land use means the one which depends chiefly on the natural productivity of the land. The technique to fell the timber and to regenerate naturally the cut over area are included here. The technique of labour use can be said to mean almost all of the techniques concerning the forestry production, but it is the technique which expects the increase of productivity mainly from the labour investment. When each of the techniques of the afforestation and silviculture is considered, it is this technique of labour use. The technique of capital use means the one which depends on the productivity of the capital goods such as machines, equipments and facilities, and the application of such technique as this is generally less advanced in the department of the primitive industry than in the industrial department. As the artificial facilities, the forest road is considered for instance. The growing stock in the forestry management, is the capital goods and is considered itself a kind of equipment or the facilities.

As a matter of fact, the productivity of the forestry management is decided by the productivity of the growing stock and the labour is considered to adjust and assist the natural activity of the growing stock. In this sense, the technique used systematically and deliberately in the forestry management may be called the technique of the capital use. In other words, the technique concerning the working system, standing-type and the rotation is the technique concerning the utilization of the capital. But being different from the machine and equipment in the industrial management, the productivity of the growing stock is combined with the land and arises from the land, so that it is controlled by the productivity of the land and its limit appears early.

The three divisions of techniques such as there are relative to each other, and they are divided mainly by the kinds of the productive elements used, so that the characterization of the technique comes to be different depending on the objects to compare. For instance, when the technique of the forestry is compared with that of the industry, the character as the technique of land use is remarkable, and when

it is compared with that of agriculture, it is clear that it has the strong character of the technique of capital use while it is the technique of land use at the same time. And even among the techniques of the forestry the organic technique compared with the inorganic one, has the higher utilization of the land and the growing stock capital, and its utilization of the labour and machine capital is lower.

At the same time, even among the same organic production technique, the nature of the technique can be relatively divided. Firstly, the kind of species has each proper technical system within the economical frame of the forestry production. Of course, the range of the scope, can be considered depending on the species. For instance, the broad-leaved tree is for land use and the conifer is for labour and capital uses. But, comparing the conifers with the species for the special use such as chestnut and walnut, the former can be said for capital use, and the latter for labour use. And, even among conifers pine and fir which are easy for the natural regeneration, are for land use in many cases, while sugi and hinoki which are common in the artificial restocking, are for capital and labour uses. Furthermore, when sugi is compared with hinoki, the latter can be said for more capital use, while the former is for more labour use, because the final age of the latter is generally longer than the former.

Secondly, the condition of the economic location can change the nature of the technique. As the yield cannot be made large in inaccessible area and the barren land, even though more labour and capital are invested technique of land use is easy to execute. But in this case, if the management has the plenty capital, the technique of capital use comes to be led in, as the condition of the production can be improved by constructing forest roads and the like. On the other hand, where the land is fertile, the technique turns to be for the capital and labour use, and in accessible area, the technique of labour use is easy to be led in because abundance of labours.

As to the selection of the means of regeneration, kind of the stand composition and working system and final age, the techniques can more or less be classified in the similar ways. The natural regeneration is for the land use, and the artificial reforestation and cultivation is for labour and capital uses. In case of the kind of the stand composition, even when it is the case of the artificial reforestation and cultivation by the same labour investment, particularly the plantation of the mixed forest is for land use, and the single afforestation of the conifer is mostly the capital use. As to the working system, it cannot generally be said, for it is different depending on the nature of the each management, but the extensive preregeneration-system is for land use and the ordinary clearcutting-system is for capital use. And the intensive selection-system and patch work system is to be for labour use. Namely the work depending on natural growth is for land use, and the single wood working and patch working system are for more labour use, and the large area cutting system becomes for more capital use. As to the production period, the short final age makes the labour investment high and so is for labour use, and the method of the long final age depends on the productivity of the growing stock as the capital, so that it becomes for the capital use.

Now, when the afforestation work is compared with the silviculture, the former is for labour use and the latter for capital use. In the former, the labour is concentratedly invested but in the latter the labour is used subsidiarily to assist the productivity of the capital as the stumpage. In the means of the afforestation, the artificial seeding and the plantation under the high trees are for land use, and the ordinary plantation is for labour and capital uses. In the dense plantation, the degree of uses advances further.

In the forestry management, it is necessary to study these natures of the forestry techniques furthermore to meet the object of the management and to consider the proper application and combination of these techniques.

VI. The classification by the combination of the production goods

When combining these three production elements that is, land, labour and capital as it is known from the classification of the forestry techniques, and the forestry management is systematized and operated. The difference appears in the structure as the whole management by placing importance on either of these production elements. When the management is classified by the character arising from the management, it may be as follows. This classification is made by the restriction on labour and capital which the management may use, in other words, by consideration on which of these production elements is scarce.

- (1) The land use management
- (2) The intensive labour management
- (3) The intensive capital management

The land use management means the management in which the labour and capital are not so much invested and the products from the productivity of the natural land are collected. As the forestry management, the investment of labour and capital lacks, and it is very extensive management. Considering the increase of the productivity of the land and production, the such management is naturally not preferred, but it cannot be denied that a pretty large area of the extensive forestry still exists today among the public and national forests, and when this extensive forestry prevails on a fairly wide area, it takes the form of extensive management. In such management, the capital lacks after all. For instance, the capital investment is kindered by the agricultural practice in the public forest and by the low price of timber in the inaccessible area. And even in the private forests, such a management cannot be said not to exist, but considering the efficient utilization of the capital, the part of the extensive forestry will be found locally. But, generally speaking, as the management of the private forest is favorably located, there are a few which carry out only the management of utilizing the land.

The intensive labour management and the intensive capital management mean the one whose investment of labour and capital is large in comparison with the management of land use. Here the land is the factor of scarcity. As to quantity, it can be shown by the labour and the capital of the yearly average per unit area. So whether it is the utilization of the land or the labour intensive, is to be considered as the relative problem. For instance even in the forestry management of the same quality, when the one management includes the inorganic production process, it will be the intensive labour comparing with the case that it does not do so, and

furthermore, when the capital such as the forest road and trucks and the like are more invested, it becomes then the intensive capital. But here the question is set only as to the forestry management by the original organic production.

What is clearly classified in the ordinary forestry management, is that the management of the saw timber forest is the intensive capital, and the management of the fuel wood forest which does the afforestation and silviculture is the intensive labour. This is because of the fact that the former has long rotation and the value of the growing stock increases, while in the latter the rotation is short, the frequency of repeated investment of labour increases and the growing stock becomes small. The management of the fuel wood forest, however, which does not do the afforestation and silviculture, is a mere management of land use.

In the similar way, even in case of the saw timber forest management, the intensive labour and the intensive capital are comparatively divided. In this case, when the final age is the same, usually the intensive degree of labour as much advances as of capital. Namely, when the number of the planting trees per unit area increases, the labour investment increases and the whole amount of the growing stock increases, too. But, when the final age is different, this relation of the simultaneous occurrences is not found. In the managements of the same working, when the long final age is compared with the short ones, the former is relatively extensiver labour and intensiver capital than the latter. This nature which can be found in the forestry management, may appear in relation to the long or short production period, and it is very important. And this nature is combined with other techniques of labor and capital uses, and shows clearly the difference between the intensive labour management and the intensive capital management.

When there is abundant labour, the intensive labour management places resistance against the principle of the diminishing return of the land, and invests the economically beneficial labour as much as possible, and so it has the tendency to become more the intensive labour. The original form of the intensive labour management is rather seen in the small-scale management and the sub-management which use the domestic labour mainly and can afford to make planned investment. Originally in the organic production process of the forestry, the working labour is invested during the period of twelve or thirteen years after the afforestation, and after that period, the increase of the growing stock is chiefly found in the growth of the stand itself. In that case, when there is abundant labour and the land is scarce relatively, the management is apt mostly to gain the income early which are the rewards of land and labour by cutting off the final age. Here the maximum of the income or the maximum of the harvest is not necessarily aimed. The more frequency of the land use brings out the intensive labour management as a result.

In comparison with such management, the intensive capital management has, for the management accounting the some limit in the intensity which makes it beneficial. Such management is found in the large-scale management which consists mainly of the employed labour, and the wage as the expense is the controlling factor for the loss and profit accounting, and economically speaking, the capital stands in the center of the management. It was stated, however, in the preceding part, that this capital is not necessarily considered the monetary capital. In that

case, while the growing stock as the property or the real capital is regarded important, the annual profit and loss accounting or the revenue and expenditure accounting is highly important. Within the framework of the management, the wage for labour invested in the growing-stock, is together with the cost for the seedling and paid off already in advance, and it is fixed in the growing stock as the invested capital. The management maintains such a capital, especially the property, and every year,—every several years will be good enough—invests the cost and gains the yield. In this case, if the economic form of the management is disregarded, and only the profit and loss is considered every year, the maximum of the net profit becomes the object of the management system when the relation with the present capital is considered, the maximum of the rate of the profit, and when the yearly percentage of interest of the invested capital is considered, the maximum of the marginal efficiency is the object. And accordingly the intensity of the capital which the management possesses will be decided. But the relation of the capital with the productivity is not actually taken into consideration, and in case of deciding its rotation, it is understood to be settled almost between the final age of the maximum harvest and of the highest value harvest, or before or after them. Usually the final age of the higher value harvest and of the highest net yield become long, and in that case, the intensity of capital increases more.

But, the intensity of the capital in the forestry management is considered not always to concern such a point. Firstly, by making the final age higher, or by decreasing the area of the afforestation and silviculture each year and by decreasing the amount of employment, the cost of each year may be decreased and the productivity of the larger growing stock itself can be utilized. Secondly, as the price of forest product changes every year, the amount of reserved growing stock the more beneficially can meet it. And thirdly it can be more applicable for the emergency need of the household economy.

For such reasons, it is considered that whenever the household economy is rich, the intensity of the capital is strengthened and the growing stock is filled up. In this case, when the yearly percentage of interest of the capital is taken into consideration, it may be preferred to be higher than the so called local rate of interest (national bond interest, etc.), but if the emphasis is placed on the preceding second and third reasons, the intensity of the capital has its sense even if the yearly percentage becomes lower than this local ordinary rate of interest. But, if such a tendency advances excessively, it is the over-intensity and it will become the form which may be called the capital reserving management.

VII. The classification by the relation of the administrative function with the management control

When the production activity is carried out by the management, each part organizing it must carry out various tasks. What relates this task to man, is called duty, and several acts which are required to attain the duty is called the function. The duty is given by the higher authority, but when it is viewed from it is called the function. The administrative function is one which organizes the management, executes the will of the management controller, conveys it to the operating labours and supervises its execution.

In the agricultural management, this administrative function is generally ruled by the managers and the management production is done by the family labour. And such a management form as this is called the self management or the family labour management. In the forestry management, this form is found in the small scale management and especially in the sub-management, but as the scale of the management grows large, the administrative labour and operating labour is separated. This is because in the nature of the work, when the large amount of labour investment is timely and intensively needed, it increases, while on the other hand, the importance and business amount of the administrative function increase in making the ordinary plan and its execution. And in this case, when the labours are hired from the outside, it is called the employed management. This is ordinarily found in the small scale management among the private forestry.

The following classification is made according to the relation between the management control and administrative function.

- (1) The direct management (self enterprise)
- (2) The administration management
- (3) The delegation management
- (4) The trust management

The direct management is found in the medium and small-scale management usually except the sub-management, and in which the managers do the administrative function at the same time. The administration management is the one which keeps the administrative staff and makes them do the administrative functions, and this is generally done among the large and medium scale management of the private forestry company management and the public enterprise. The forest cooperative is also in this category. The forest guards, in the private forests do such administrative functions, but as to the administrative staff, he is the staff responsible for management and accordingly receives the regular pay. As the scale of the management becomes larger, the number of this staff increases. In case of the national management and the corporation management, the division system of the special function and the regional department is arranged and so called "administrative organ" is established.

The delegation management means that the management controller delegates the administrative function to the other well organized administrative organ. This is done by delegating the administration to the proper forest cooperative etc. when the forest owners live away from the forest area. In this delegation management, however, the administration is delegated, but the forest owner controls the management.

The trust management is done based on the trust law. The one who is delegated the administration carries out the management control at the same time, subtracts the real cost from the result of the business during the trust period and sends its net yield to the forest owner. The contribution forest cooperative can carry out this. Accordingly in this case, the forest owner loses not only his administrative function, but also his management control during the trust period.

In the direct management, the management control is accompanied by the administration, and furthermore in the self management—the family labour management

even the operating labour is united, so that the management is much elastic and it is the management worth while working because all the revenue except the expenditure becomes his own income. But this is closely connected with the household economy. When the family is abundant in labor capacity, the elaborated work is done so that the result which can not be expected in the employed labour is sometimes gained. But when the sufficient knowledge in the forestry is lacked and there is no room for capital and labour, and it often stays in the form of the so called management of the land use. But as the management scale becomes larger and the lands are scattered gradually in the remote area, the family labour capacity is restricted, and it becomes a mere direct management and changes to the form where the operation is mainly carried out by the employed labor. Furthermore it is influenced by the wage of the employed labour, so that its intensity of labour does not develop as in the case of the family labour management. Even under these circumstances, the elasticity of the management production is comparatively large, because the management control is joined with the administration. And what influences most the amount of business of each year, is chiefly the price of the forest products and the circumstances of the house-hold economy. It sometimes happens in such management that the sudden difficulty in maintaining the capital occurs owing to the influence of the current economic condition.

In the direct management, when the owned lands are so much scattered, it delegates some people near the forests a part of the administrative function such as the jobs of protection improvement of forests. These forest guards are gradually interested in forestry and frequently they carry out the execution and supervision of this work by themselves under the consent of the manager. In such a way, the forest is improved and its productivity increases, but at the same time, the elasticity of the management control which the manager owns is gradually restricted. In other words, in this case, the rational execution of business becomes easy to carry on and so the capital intensity is apt to increase, but the degree of free harvesting becomes more or less poor.

In the administrative management, its relation with the house-hold economy more diminishes or does not exist at all, but the regular pay for the administrative staff is always the burden of the management. The manager makes the plan of business for every year and engages in the management control. He needs to make the plan so that he may at least gain the income necessary for himself and the salary of the administrative staff (including the tax and other levy) from the revenue and make the administrative staff work efficiently. Accordingly in the operation of each year, the continuity and equity to a certain degree will be found. And with the prospect of the yield decrease in time of the depression the reserve-forest is necessary. As the administrative staff increase and the administrative organ becomes larger, the management grows more systematised and the business amount becomes rather constant every year. The advancement of the labour intensity based on the elaborate working method is uneconomical. Then, the systematic method of production is applied and the operation system which efficiently carries out by employing a large amount of labour at one time, is more important. As to the production technique, it moves from the journey-man's

technique which is quite of handicraft and elaborate, to the technique of the mass-production which is rather extensive. In this case, although the skill of each labourer is in question, the result of the management production largely depends on the average of the general techniques of the labourers in a particular locality.

The delegation and the trust managements are gradually necessitated as the forest management is settled on the land and will not move anymore.

VIII. The classification by the continuity of the production

In the forest management, the increase and decrease of the yield have the close correlation with increase and decrease of growing stock. The ordinary production amount based on the annual increment of the growing stock seldom changes in a short period, but it is easy to increase the harvest temporarily, and in this case the capital decreases directly. And if the structure of the normal growing stock, is once destroyed, it does not restore to the original productivity for a long time. So that in the forest management, the maintenance of growing stock is especially important, and in this case, the so called sustained yield can be attained which means the continuity of the production.

Incidentally, this continuity of the production is an essential factor in not only the forest management but also the management of all kinds. Because the management is organized and carried out on the preposition of the repetition of the production in the other words, it is the continuation of the production. So called "going concern" (continuous business body) is the term in the accounting, and it shows an essence of this management.

But, in the practice of the forest management, strictly speaking, it is seldom that the yield is made according to the annual growth. And especially in a short period, the yield can be much more or less than the increment. Furthermore, such a case can be also considered as that the yield in accordance with the yield does not always result in the maintenance of the continuity of the production for a long period.

When the kinds of management are classified as the measure of the continuity of production, they are as follows.

- (I) The equilibrium management
- (II) The multiplication management
- (III) The over harvest management

The equilibrium management means the one in which the productivity of the growing stock is maintained to a certain degree and which is operated by the policy to make the production amount continuous and regular. So in the static economy, the amount of capital and that of loss and profit become continuously regular. This is in the ideal point of view in the category of the strict sustained yield working and accordingly it is the same as the management of the normal forest. But as a matter of fact, (1) because the condition of the land is not uniform, even in case of the same management, the amount of the growing stock are not regular and naturally the amount of the yield and accordingly the annual increment are of variety. (2) As the technique of the forestry also makes progress in the long period, the amount of the yield and that of capital may vary as a result of the application of the new technique, even though the price condition

stands same. (3) When the price of the products and the cost vary, the structure of the management gradually change accordingly. So that in the long period, this equilibrium management cannot exist, but it usually turn to the following multiplication management. But this form of management is the most fundamental. Although it may gradually change, the management shifts as closely to this form as possible by adapting to the composition of the forest and the economic condition of each time.

The multiplication management means the one which is operated by the plan to increase the future productivity and the amount of the yield by increasing the growing stock. As the concrete means of the capital multiplication in the forest management, the followings are some of examples; (1) The capital is increased, by decreasing the present yield and by keeping the growing stock having the high productivity. (2) Although the formation of the whole forest is not varied, and the yield is not decreased either, the more intensive technique is applied to silvicultural work for growing stock and the productivity is accordingly increased. (3) Although this is the means useful for increasing the productivity in the long future, as long as there is the land unutilized productively, such land should be afforested as much as possible. (4) Upon full construction of forest roads, the proceeds is increased by substantial rise in timber price and the efficiency of the labour will also be increased.

In the process of multiplication, these means will be after all applied in accordance with the importance. When these means are attained as expected, it is transformed into the equilibrium management. Anyway, these are the process of the investment. When these means are executed at the same time, the expense of each year will increase but while on the other hand the yield will decrease when compared with the case that these means are not executed. The scale of the investment business will be restricted automatically so long as the special supply the fund is not made from the finance or the house-hold economy.

The over-harvest management means the one in which the means of production is applied where the harvest is increased but the loss in the growing stock is apparent. So in other words, this destroys the management system and is naturally not preferable. But on the contrary this form often happens to emerge because of the necessity of the house-hold economy and the managers' lack of understanding in the forest management. Namely the motive which causes this form firstly comes from the outside of the management. But the management of this kind is, temporarily as it may be, considered proper in some cases of the managements for the inner circumstances of the management. For instance, they as found in the following cases. (1) When there are many natural forests of the old age and overmatured, the portion that is seldom expected to grow more, is tried improved to the forest with more productivity by selective or clear-cutting. (2) When the natural forest of the deciduous trees whose productivity is low, is intended to change to the artificial afforestation land of the conifers whose productivity is high. (3) When the reserved forest is felled for the maintenace of the management. In this case (1), however, the yield can be remarkably increased, but the decrease of the yield in the future sometimes will be doubtful even though the

harvest will be maintained. In such a case the means of (3) in the multiplication management will be needed to be used at the same time. In the case (2), the harvest (the fuel wood) increases, but the net yield decreases and the amount of the investment increases. So as a result, this is often the same as the multiplication management.

The aspects of the management production so far related are not always applied to each of the management, but in the long period, it is considered that these three forms take place alternatively. And, these three forms are relative. For instance, the increase of the yield in the management considered equilibrium is the over-harvest, and the process to plan the increase of the capital in the over-harvested management is always multiplication. And from the historical point of view, it is considered that in the process in which these three forms alternate with each other, the forest management makes itself rationalized and increases the yield, very slowly as it may be, according to the change of the social and economical conditions, especially the change of the price and the demand of the forest products. Namely this is the form that the forest management applies itself to the social and economical conditions.

In the process, however, in which these forms of production, the problem is the over-harvest management. In this case, the loss in the growing stock is often made out very strongly. This tendency was often found before and after the War. On the other hand, as the demand for the forest products do not decrease, but it tends to increase gradually, the management of this form is apt to increase the supply by shorter rotation. If special care is not paid, it will hardly be possible to carry out the multiplication in the present growing stock. What is comparatively easy, is to change the unproductive land to the productive one. As a result, what is firstly found in the process of multiplication, is the phenomenon that the final age does not restore to the original so easily, but the afforestation land increases. And even in this process, although the multiplication is shown temporarily as the whole capital, the phenomenon will grow that the further cutting off the final age is made as a result of the decrease of the harvest objective forest. And thus, the gradual multiplication is tried. But before it is cut off again to the original final age, accordingly before it is restored to the process of the equilibrium management, it is not rare that it is again turned to the over-harvest management.

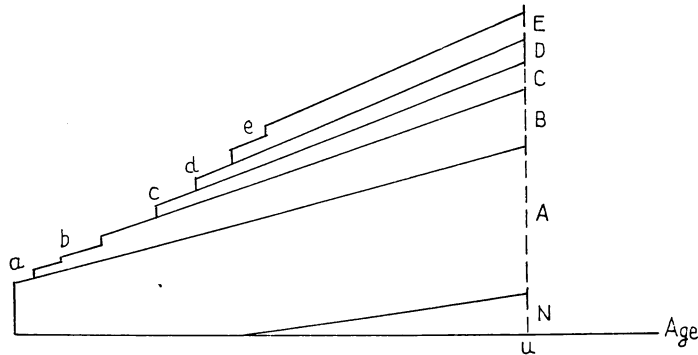
So that, when the forest management reaches the step of equilibrium management as fast as possible and maintains it and furthermore change it to the multiplication management, it is necessary that the constant management policy in the long period should be taken. But it is foolish to keep the only constant means of production indifferent to the outside economical fluctuation only for that reason. The caution should always be exercised on the improvement of the mean. And, although the minimum harvest amount to maintain the management must be supplied every year, if there is more margin in the production, it will be the means to increase the future yield, that this margin is hoarded for the purpose of more supply in the business prosperity.

Part III

A Study on the Forestry Economic Location

Chapter 1. Economic Location and Production Intensity

1. The relationship of capital goods (planting stock), labor investment and the production volume is shown in a figure as follows: In this case the measurement unit is to be considered labor unit.



When the forest land is left as it is after cutting, it forms a natural stand for a long period and however it grows, if the yield for u years of cutting age is N , its value is in most cases small. If it is reforested, the yield increase more considerably than N in the same u years. On the other hand, when the period of production can be lessened than u years to obtain the same yield, the reforestation work has the economical significance.

When a is the capital goods and labor investment, A is the corresponding yield, b is the tending labor and B is the corresponding increased yield, c is the labor for improvement cutting and C is the corresponding increased yield, d is the labor for pruning and D is the corresponding increased yield, e is the labor for thinning and E is the corresponding increased yield, then in the economic production beside the relationship of $A > a$, $B > b$, $C > c$, $D > d$, $E > e$, is generally formed, under the condition of respective price, and taking consideration of function of capital interest, the production method is established so as to rationalize as much as possible $a+b+c+d+e$ and $N+A+B+C+D+E$ and eventually to get net profit and land rent as much as possible. As a result, the capital goods and labor investment differ individually and the so-called production intensity differs accordingly. As a general tendency of intensity in forestry production, the following points can be considered.

- (1) As the natural forest moves toward the artificial forest, the intensity increase.
- (2) As the production period changes, the intensity changes. With the extension of period, the intensity of capital increases but in the artificial forest, the mean intensity of labor decreases. This relation can be easily understood in the normal forest management.

(3) Even in forestry production, the intensity changes considerably according to the combination of production method and the period of production.

2. Production intensity is measured directly by labor and capital investment per unit area but it is determined by the technique to be used or production method (including the period).

Since the forestry is the land industry, the aim for objective and common selection lies in the acquisition of the possible highest rent. As a factor for determination of production intensity, Mr. Brinkmann in case of agricultural production points out as follows.

- (1) The natural conditions of land.
- (2) Transportation location.
- (3) Development stage of national economy.
- (4) Individual circumstance on the part of the producer.

The above is the same with forestry. Other factors such as political and social systems are considered but they are to be included in (3).

In the present forestry, emphasis has been placed on (1) The natural conditions of land. But it is rare that the land decides the only one production species.

(2) is the subject of this paper but hithertofore its economic significance has been rarely considered in forestry. (3), along with the development of national economy brings the variation of demand and price of forest products, developments of transportation facilities and production and processing techniques and the resultant favorable change in forestry production. Because these (1)—(3) function universally and rationally on the behaviour of forestry production, it may be called the objective factor. But in (4), as each production and management decides the different aim and the extent of knowledge on economy and technique varies and the ability of capital and labor investments varies, it indicates the behaviour of different production. Therefore, (4) may be called the subjective factor.

In this paper, the stress is placed on the influence of the factor of (2) on forestry production.

3. The economic location is the relation which the land holds in the economic outside. As whether the location is good or bad is measured by the fluctuation of price of products and production elements, it is considered on the basis of the market. Even if the market price of a certain forest product is the same, the price in the forest or the stumpage price varies with the location of the forest land. In the favorable location, the forest tree of the same species is higher in stumpage price and on the other hand, as the price of production elements are likely to decline, opposing to the principle of law of diminishing return, it raises up the production intensity and increases the tree growth, and profit which means worthwhile under taking. Eventually the land rent increases. On the other hand, in the unfavorable locality, owing to the low stumpage price, even if the natural conditions is good, because of low gross profit the expense can not be spent enough and the production is likely to be extensive.

Naturally, the transportation location changes gradually during a long period. On the contrary, due to the development of transportation facilities, the production near the market become extensive and the extensive production in the inaccessible

area becomes gradually intensive.

Mr. THÜNEN in his "Isolierter Staat" located the forestry sphere next to the free agriculture sphere after he studied the distribution of location of agriculture, forestry and livestock on the ground that the forest products are relatively high in transportation cost and in the weight of product per unit area is smaller than vegetable and larger than grains and livestock. However it may be so theoretically, he added, the fact that it does not always occupy such production sphere is attributed to the reason that forestry can not move to any suitable area because it requires a long years production. But that the forestry sphere moves more into the hinterland than the agriculture is due to the fact that owing to the development of transportation facilities, the forest area which can afford the product to the market is expanded and there still remain room for the supply increasing by draining on the stumpage capital and so the market price of forest product is comparatively lower than farm crop and on the other hand, the agricultural production is done more freely than the forestry and along with the advancement of production technique the production increases and raise up the land rent considerably.

4. In the forestry production, in line with the favorable economic location, as it increases land rent, in the process of increasing the production intensity the tendency of change in production cost and production method is as follows.

(1) If the forestry production includes logging operation exclusively, the stress of production cost as first is placed on the inorganic expense in the process after cutting but its intensity increases in the form of gradual increase of ratio of organic forestry production cost. It is because the organic production cost is higher in productivity than the inorganic production cost.

(2) Change occurs in the content of the organic production cost. In the stage of extensive production in most natural stand, as it is a problem how to preserve and dispose the existing growing stock, the capital there is rather the commodity store capital than the production capital and the major item of the forestry production cost is the capital interest of the expected selling and buying price of forest growing stock to which some administration cost and reforestation wages are added.

In the stage of advanced intensity, the forest growing stock is gradually treated as production capital and consequently, the nature of capital interest changes accordingly. When reforestation and tending works are conducted extensively beside that the wage increases remarkably, the cost of seedlings and tools and equipment increases also and moreover, the depreciation of fixed capital on forest road is required. In general, labor cost increases and a part of it is paid as the fixed capital goods expense and on the contrary the capital interest expense is likely to decline.

(3) When the land rent is high and the production intensity advances, the tree species which is higher in profit and higher possibility of intensification are selected. Such species are *Cryptomeria japonica* in Japan and fichte (*picea Excelsa*) in Europe. Variety is also selected in the same sense.

In the stage of extensive production, the tree species which elevates the capital productivity and can endure the extensive investment of labor are desirable. In this stage, the right tree on the right site means to elevate the productivity of

labor and capital. Natural species high in growth and profit is apt to be selected.

(4) Along with the progress of the production intensity, the production period is shortened. At this time, the second growth after cutting in natural stand, and the period of non growth in the mature stand is shortened. Further as the artificial sowing proceeds to artificial planting, the period of growth in the forest is effectively shortened by use of grown seedlings. Instead, the cost of seedlings and reforestation increases. But in the extensive artificial planting, the formation of stand and the growth thereafter is delayed and the production period is rather prolonged. In the intensive production, the unutilized period as cutover area is exceedingly short and as the representative production method in the clear cut stand, the production of small and medium diameter logs with short rotation and the immediate collection of capital by increasing thinning with rather long rotation increase. Also in the selective forest, such method as to increase the frequency of yield with short regression and artificial planting is adopted.

5. Before discussing the theory on the economic location, the author states on the calculation method of land rent.

In the forestry management, by changing the annual expenses, the corresponding reasonable production can be considered. In this case, the marginal cost curve is introduced from the mean cost curve per production volume and the production volume consistent with the price of product is the proper scale in the management. The surplus which the expense is deducted from the gross profit is the total land rent to be allocated to the whole land of the management.

But this land rent is not the rent which can be obtained in the normal production under the current condition of price of the land, in other words, not the balanced land rent.

This balanced land rent, on the premises of free removal of production elements other than land, can be obtained in the case of rational production. This is the so-called ideal condition of production but it is the land rent to be allocated properly among the land industries which compete each other seeking for the potential high land rent.

Such land rent, beside the realistic economic structure, is of such a nature which is found in the normal stand management in a case of the most beneficial production intensity under the current economic condition.

In the allocation of the total amount of the land rent as a management, the selfishness to some extent is brought about. If it is to be evaded, the same method of the land rent calculation as in the forestry management is to be followed in the individual forest land. It is because the land rent of the forestry production and forestry management necessarily indicate the same trend.

Chapter 2. Economic Location and Land Rent

6. The theory of the location of forestry production is not essentially different from that of agricultural production. But there is a difference between these two production. While in the agricultural production the adaptation of the production economy to the location is able to be done quickly, the adaptation in the forestry production is very slow. But in the world of theory, we can consider the rationa-

lized location of each forestry productions which are striving to provide maximum rent, to understand the economic rational structure of the forestry.

7. The problem of economic location will be able to say to make clear the relation between the land rent and the distance from market. In the case of same production method, the following formula will be shown the land rent as a function of distance.

$$R = E(p - a) - Efk$$

Here R is the rent per unit of land, k is the distance from market, E is the yield per unit of land, p is the market price per unit of product, a is the production cost per unit of product, f is the transport rate per unit of distance for each product. It becomes plain that the formula describes a linear functional relationship between distance and rent and the maximum rent of land at the market is $R_0 = E(p - a)$ and the distance to the marginal land where rent is 0, is $k = \frac{p - a}{f}$. So we can describe the linear typed marginal rent function from this formula. As the spatial extent of production is determined by the process of maximizing rent and the diameter of production area is $k = \frac{p - a}{f}$, so if the natural conditions of land are equal, its total production area is $\pi \left(\frac{p - a}{f} \right)^2$ and the product volume to be supplied the market with by a given price is $E\pi \left(\frac{p - a}{f} \right)^2$. Accordingly, if the price rises, the production area will increase and the product volume and price will be determined by the cross point of supply and demand curve at the market.

In the case of two products the following conditions for which the both production zone can exist are necessary and sufficient.

$$E_1(p_1 - a_1) > E_2(p_2 - a_2) > 0$$

$$|k|_{R_1=0} > |k|_{R_2=0}$$

Then the area of the outside production makes a ring formation.

In the case of two and more products, the spatial extent of a production is not determined by its price, but is influenced by prices of all other products.

8. The marginal rent function is linear, because we assumed that the production method and intensity are fixed. In this case the average cost is always same, even if the production volume differs. But the assumption of the fixed average cost at different production volume is not actual. Accordingly, if we consider that land rent and production intensity vary with the change of distance, the marginal rent line is not linear but will be upward concave curve. But the conditions of existence of each production in this case are also different with the case of marginal rent function.

9. Assume here, the forest district centering around a market; there is the spatial location of multiple forestry productions rational and supply and demand of products are maintained equilibrium. The slope of marginal land rent curve is upward concave as above-mentioned. If the transport rate decreases by the traffic development, the distance between market and marginal land will expand. And the demand will change according to the supply increase and the new equilibrium prices will be established. This new prices will be lower than the old, but the lowered rate will be perhaps smaller than the decreasing rate of transport. If so,

the land rent near the market will decrease by the lowered prices and its production will be extensive, and where the lowering rate of prices is equal to the decreasing rate of transport, land rent and production intensity is the same as before, and further outward for the sake of decreasing rate the rent and intensity will be larger than before.

Chapter 3. The Location of Forestry

In the forestry production, each of the realization and progress of the forestry production is different by the distance from the community of the cities, towns and villages and the distance from the market. The community was in its beginning the self-supplying market and it still gives the influence on the aspect of the cost investment on the forestry production. The condition of the forest products market rules the price of the forest tree. In addition to the change of the economical circumstances in the long period in relation to the above related the social and political influence is different according to the convenience or the inconvenience of the forest land and as the result, it is seen that the difference of the production forms arises in the vicinity of the community from the back land. From this fact, the change of the nature of the forestry production which arises from the distance of the market or the community can be studied.

As a matter of fact, however, the forest land which carries on the production by the different management object, is scattered and mixed up, so that it does not always show the tendency of the constant change, but there appear not a few cases where the mixture and inversion of the various tendencies which will be later related are shown. But here such a partial difference will be extracted and the explanation will be stated.

Although this is a way of classification only for a convenience, the followings can be shown when the forest district is divided in relation with the degree of the progress of the forestry production and the other industry, especially the agriculture.

- I. The district of the forest for the agricultural use.
- II. The district of the economical forest.
 - (I) The district of the labor utilization.
 - (II) The district of the capital utilization.
- III. The district of the natural forest.
- IV. The district of the unused forest.

Viewed from these divisions, a pretty large difference can be seen in the possession form, management object and the management means of the forestry.

I. The district of the agricultural forest

In the forest of this kind, the forest production was done from the earliest days and historically it followed the process of the self-supply (order) and the market production. And, during this process it mostly had the close relation with the local agriculture and then advanced. For this reason, the number of the private forests is big, and because of the transfer of the possession in the long period, the scale of the possession of the forest land is generally small, and each of the possessed lands is minutely divided and scattered. There are many self manage-

ments and especially the sub-managements are the main ones. There the production is held following the principle of complementing the house-hold economy. The forest products are produced for the self-supply on the agriculture and house-hold economy and for the source of cash income. So that, the forests for complementing the house-hold economy, management production and for the use of the sales production are each mixed.

The utilizing degree of the forest land is high and the stumpage is treated chiefly by the inside and outside transaction motive. The utilization of the labor is possible at any time and the condition of labor investment is good, so that the production of the forest products whose period of production are comparatively short and frequency of incomes is big, is likely to be led in and there are many of the production forms of the special forest products and the fuel materials. The much harvest is one of their objects and much labor is invested accordingly. And the fertilizer and so on can also be used. The timber production is also high, but its felling age is low. And as the whole form, this is the form of the mixed production with the forest products and the others, and from the view-point of increasing the efficient labor investing amount on the land, the kind of the utilization of the forest land is chosen and combined. As the land area is the controlling factor, the forms which do the horizontal combined productin of the forest tree unit come to increase (for instance, the intensive felling work). It takes what we call labor intensive management form and in the fuelwood forest for the use of the sales production, the afforestation and the tending is also held. But, as to the timber forest production, the frequency of the labor investment which accompanies the benefit decreases and it becomes careful as the frequency of the income decreases. As the history of the forestry production is old, the districts where the forest lands get sterilized and the pine forests grow prevalent, but these are apt to be turned for the use of the posts and the pulp materials. Many of the administrative forms are the self managements by the family labor and the direct managements using the employed labor. As this is the district where the price of the forest product is high, however, the private management of large and middle scale comes to appear and some of these are seen to hold the capital intensive management to a certain degree by keeping the administrative management or the administrative management or the administrator (forest guard). As it is convenient, the maintaining of the capital is difficult. The reason for this, it gets connected with the labor intensive as the price of the forest product is high. But, this often results in the over-production. And, this district includes the part that becomes the the farming land or the forest land by the depression or the prosperity of the agriculture because of the direct agricultural demand of the enlargement of the farming land.

II. The district of the economical forest

This is the district where the economical forestry production is carried out. This is divided in the district which is close to the district of the farm forest and where the degree of labor utilization is progressed, and in the district of the capital utilization where the degree of depending on the capital is relatively bigger than the outside labor.

(1) The district of the labor utilization (the labor intensive forest)

This is adjacent to the outer part of the district of the farm forest and its history of the forestry production is old next to that of the district of the agricultural forest. The utilization of the land started in the self-supplying production of the joining form, and its division to the individual was made in the days when the value of the forest products was still low—although the age is comparatively old,—for this reason, the ownership of the forest land per a division is a little bigger, and the ratio of the middle and small scale management increases. There are some forests for self-supplying production that is for the use of complementing the house-hold economy and the management production, but in the private management, the forests for the use of the sales production which make the market production, increase.

As the forestry district, here the value of the forestry product is high and accordingly the labor can be invested profitably, so that even in the form of the economy complementing the house-hold economy, the economical object of the management comes close to the income principle or the commercialism. But what is different from the district of the farm forest, is that the restriction appears on the labor investment as the occasion demands. In the farmer's off season or so, to invest it somewhat in a sum comes to be easy, so that the timber forest and the fuel woods become easier to manage. Especially in the intermittent harvest of the agricultural products and the cultivation of the trees for the special uses, as the carriage and casting-in of the fertilizers become difficult, it turns extensive and its area also decreases.

There are the self-managements, too, but the direct management is easy as the employed labor is easy to be obtained. And there exist some administrative managements, but both the labor and the capital turn more intensive. (The employment is possible with comparatively low wages).

Both the timber forest and the fuel and char-coal wood are run by the transaction motive generally. It is more so as the management scale is smaller. As it is run by this transaction form and is the labor intensive, the felling age generally goes down and the partial cutting work is held. In the timber forest, the simple production of the cryptomeria, (Japanese cypress) and the pine is carried on. Even when the objective materials of the main felling are the industrial timbers, from the young age, the combined supply of the posts, scaffolding logs and the pulp materials is held profitably. Namely as the utilization of the small-diameter tree is easy, the afforestation and the tending is easy to be done and thus the labor intensity advances as well. In other words, as to the trees for the special use in the district of the farm forest, the increase of the labor intensity can be tried on the preposition of the felling age for the large benefit, but in this district, the labor utilization by way of the low felling age and the increase of the frequency of the harvest, is easy. And, in the fuel wood, the production on order (domestic) is held in the form of the subsidiary business of charcoal manufacture of the farmers. In such a place, the selecting system of the short rotation is also carried out. There also exists the forestry production by the precautionary motive for the house-hold economy and the agriculture but the felling age is high there.

In view-point of the meaning that the felling age is generally unable to be much cut down, the management of equilibrium can be said almost to be held. In this district, however, the more close to the outside, the more it moves to the production form which places the emphasis on the capital. In such a place as that, the small diameter tree is secured of its market as the means of the transportation advances, so that the felling age gradually goes down and there comes the tendency to show the aspect of the over-harvest management. But, the labor intensity advances as much.

(II) The district of the capital utilization

This is gradually moved from the district of the labor utilization. As the distance of the communication is extended, the labor wage comes to rise substantially, so that it moves from the production form which places emphasis on the labor productivity to the one which places emphasis on the productivity of the capital.

The small-scale management and the sub-management by the self-management remarkably decreases and the various ownership which can utilize the capital come to show up. The private large or middle scale management, corporations forests and some of the national and public forests come to appear. The time when the forestry production took place is generally late and many of them moved from the natural forests, so that there are many whose fertility of the land is high. There is the margin in the land, but the price of the forest product is a little low, so as the result, the relative importance of the administrative management which can carry out the systematic management production increases. Its chief work is the sales production for the market and the management which follows each object is executed. And partially the delegation, trust and leased land forestry.

The disposition of the stumpage is mainly done by the transaction motive and the area of the market production of the timbers which can more utilize the productivity of the capital increases. But in the private and the company owned forests, the holding of the stumpage appears by the precautionary motive and the speculative motive which expects the price rise of the forest products. And in the corporation's forest, the production to the order is also carried out for the father corporation or so.

As this district is near the district of the watershed, the forests for the social and public use increase, and it is especially so in the national and public forests. And, even in the public forest of this district, there exist the joining forests used for the demands of management production and complementing the house-hold economy of the farmers.

In the timber forests, the production of the industrial timbers whose felling ages are comparatively long is the main object. As the labor is extensive, it takes the production structure that mostly specializes in the pure conifer-trees. And, as the utilization of the small diameter tree is also a little difficult, it tries to gain the yield by executing systematically the organic and inorganic works of the comparatively wide area. The cutting system of large size is carried and the

afforestation and the tending also come to be rather extensive, but as a result, it grows the mixed natural trees and it results in the realization of the combined supply. There also exist pretty many fuel wood but they become the form of the land utilization management. And, the production period becomes comparatively long and the directly run charcoal manufacture of the forestry management and the enterprise system of char-coal production is carried out. In order to make the supply of the products as profitable as possible, the investment on the instituting the forest road, skidding machine and the carriage tools are advanced.

As the holding of the stumpage by the precautionary motive or the speculative motive is tried, the form of the multiple management is adopted but when the means of the communication becomes profitable, the transaction motive is promoted and it can change to the form of the over-harvest management at once.

III. The district of the natural forest

This is the district where the ordinary forestry management is not yet realized. The standpoint of the transportation is bad, the natural forest is many in the number and the collection business is carried out, but the organic forestry management is not enough economical nor does the afforestation progress. So that here the management of the national and public forests which is based on the cost compensation principle, is the main body and the management of the land utilization is executed. But, it cannot be said that the advancement of the corporation by the precautionary and the speculative motive is not seen.

The mixed natural forest of the coniferous and deciduous trees is the chief one in district and the age of the tree is high. The forest product which is profitable by the market production (inorganic) is only supplied, but its kind is comparatively simple. Especially when the capital lacks, the reckless afforestation is apt to take place. Therefore it becomes necessary to increase the efficiency of the capital. For this purpose, cutting work on large area has the rationality. But this district is generally located near the watershed, so that the security operation of the national land by these forests is important. For this reason, the select cutting and cutting work on small area are carried out. But, this select cutting work becomes extensive. In the deciduous forests, the combined supply of the timber and the fuel wood is executed, but the market production of the fuel materials is difficult to do, and so the enterprise system of charcoal manufacture and the directly run char-coal manufacture business are carried on.

The productivity of the forest wood in such a district as this is almost of naught, so the collection business always becomes the over-harvest management. But it moves gradually to the capital utilization district as the means of the communication makes progress, and the multiple management comes to take place.

IV. The district of the unused forest

The forests in this district are mainly the national ones, and a part of them is the public one. Here is no artificial communication road and the collection business is hard to be done. But, historically, the area of this district is always diminishing.

Considering the standpoint of the transportation is known to be a big factor

in the forest business, which gives the management form and the production structure a change. By whatever it is, the voluntary investment of the labor is promoted in the convenient district,—although all of the investments are not the organic ones,—in the other district, the capital becomes the power for the development of the principal forestry.