

Forestry in the German Democratic Republic

by

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1. *History*

In Germany the endeavours to manage certain forest areas dates back to the twelfth century. The largest part of the German forest areas, however, was treated without any care until far into the 17th century. Since the commencement of capitalism timber requirements have increased rapidly. Devastation of forest on large areas was the rule, as wood utilization was performed in an inadequate manner by insufficiently trained forestry people. At the beginning of the thirteenth century the wood famine reached its climax in Germany, above all in the then already industrialized parts of the country, e. g. in Saxony (mining, glass manufacture, iron manufacture). In the second half of the eighteenth century various attempts to reorganize forestry proved a failure. Heinrich Cotta deserves the greatest credit for having initiated the successful reorganization of forestry. He recognized that it was impossible to establish a sustained-yield efficient forestry without a personnel, well trained in practice and science. Therefore, he founded a school of forestry in 1786 in Zillbach, which was transferred to Tharandt in 1811 and raised to the rank of a Royal Academy in 1816. The Forestry College was combined with the Dresden Polytechnical University. Thus, Cotta laid the foundation of the oldest forest training and research institution in the world.—In the following decades Tharandt was helped very much to bring about an efficient forestry as well as a highly developed forest research and training. Among former teachers at Tharandt the following deserve special mention: Cotta,

Reum, Pressler, Judeich, Roßmähler, Judeich, Martin, Stockardt, Nobbe, Escherich, Huber, Vater, Hegershoff, Krauss, Prell, Heske, Wienhaus, Heger, Kienitz, Blanckmeister and many others, who had and are still having great influence on forest practice and science. The good reputation which the German forestry enjoys in the whole world can be attributed to them.

2. *Area and Population*

The total area of the German Democratic Republic is 10.8 million hectares. Of this area 6.4 mill. hectares are agricultural areas (60.1 per cent) and 2.9 mill. hectares are forests (27.4 per cent). The ratio of forest to total area amounts to 27.4 per cent and is somewhat the average of Europe (28.3 per cent). The forest area per capita (1960: 17,200.00) is 0.17 hectare and lies far below the European average which is 0.25.

3. *Distribution of Principal species*

In the German Democratic Republic conifers exceed (79 per cent of forest land) in comparison to the broadleaf forests (21 per cent). The ratio of forest to total area and the distribution of trees species in the various of the GDR is extremely different. In the northern parts of the republic (low country) broadleaf and pine forests predominate. In the south of the republic mountains of medium height (Harz Mountains, Thuringian Forest and Saxonian Erzgebirge) predominate. In these regions spruce is dominant. In the GDR the unproductive forest area is 2.2 per cent.

4. Property Relations

4.1 Forest Ownerships

Prior to 1945, the property conditions were very different. After World War II, when the agrarian reforms were accomplish-

ed, the private forests over 100 hectares were transferred to national ownership. Until 1948 a forest area of about 760,000 hectares which formerly belonged to big landowners and war criminals was confiscated. In 1963 the situation was as follows:

National forest	1.89 million hectares	64.1 per cent
cooperative forest	0.53 " "	17.9 " "
private forest	0.49 " "	16.4 " "
church forest	0.03 " "	1.0 " "
foreign property	0.01 " "	0.4 " "
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2.95 million hectares		100.0 per cent

The proportion of the cooperative forest is steadily increasing.

4.2 Size of the enterprises

The nationally owned forests are managed by 96 State Forest Enterprises. The productive area of the various SFE is very different, it varies in the mountains with medium altitudes from 10,000 to 20,000 hectares and in the low country from 20,000 to 60,000 hectares. Management in the cooperative forest is performed by 9,000 Agricultural Cooperatives and management in private forests by 80,600 ownerships.

5. Silvicultural Systems

While in the seventeenth century mixed broad leaf forests still prevailed, the forests suffered a tremendous change through the influence of the capitalistic doctrine of soil rent in the 19th and 20th century. This development did not remain without influence on the silvicultural systems. In 1800 in Ger-

many the portion of the coppice forest (coppice shoot) with hornbeam, oak, alder, maple with rotations from 5 to 25 years was still 30 p.c.; coppice with standards 10 per cent. At present, in the DGR pure, one-storey high forest stands (spruce, pine with rotations from 80 to 120 years) predominate. Conversion of the single crop stands to multi-storey, highly productive mixed stands on suitable sites is one of the most important problems.

6. Growing stock and Age Class Proportion

The present growing stock conditions give a clear picture of the excessive fellings which began in 1936 due to the war preparations and were continued after 1945 for the purpose of reforestation and rebuilding the economy of our country. During this time the excessive fellings varied between 50 and 400 per cent above normal. Today fellings are lower than total increment.

The following table 1 shows the growing stock relations, divided into tree species and ownership categories (situation in 1961):

tree species	total forest land		nationally owned forest		other forest	
	wood-land in p.c.	solid volume per hectare	wood-land in p.c.	wood supply m3 per hectare	wood-land in p.c.	wood m3 per hectare
spruce, fire Douglas fir	22	134.7	25.5	135.7	16	132.4
pine, larch	57.5	94.5	53	93.1	65	96.2
oak	5	147.2	5.5	153.7	4	135.6
hard broad leaved	10	180.7	11	184.0	9	173.7
soft broad leaved	5.5	75.4	5	82.5	6	66.7
	100.0	113.6	100.0	117.0	100.0	108.3

The excessive fellings have a detrimental influence on the age class composition. The originally high proportion of woodland from 1 to 20 years shows this clearly (table 2):

Table 2: *Age Class Composition of state forest in 1954*

Age Classes	Composition on Basis of Area
over 80 years	23 per cent
61 — 80 "	15 " "
41 — 60 "	16 " "
21 — 60 "	16 " "
0 — 20 "	30 " "

After 1954 the proportion of stands over 80 years has further decreased on the other hand the proportion of stands under 40 years have increased. The high proportion of medium-aged stands with high increment as

well as lowering of the cut-figures according to plan made it possible that since 1960 the current annual total increment is higher than the annual cut figures so that the desired increase of increment could be realized in order to stabilize stock conditions little by little. The present current annual increment on the total area of the GDR at an increment per cent of 3.5 is given with approximately 9 to 10 million cubic meter.

7. *Felling Volume and Timber Import*

World War II brought the heaviest devastations to all sectors of economy of the GDR. Wood was the only building material and fuel being at disposal in sufficient quantities at that time. Consequently, the forest had to make great sacrifice. Constructional timber, fuel, pitwood, and pulpwood were needed in large quantities in order to normalize economy in all fields and to supply the population with most needed products. Cut figures in the years 1946-1960 can be seen from table 3:

Table 3: *Cut figures for Total Forest Area in 1946-1960*

years	wood under 7cm top	firewood over 7cm top	total of wood over 7cm top	M3 of wood over 7cm top per hectare woodland	wood under 7cm top
	in million		m3	without bark	
1946	13.2	6.1	19.3	7.2)
1947	12.0	10.0	22.0	8.2)
1948	12.9	6.2	18.1	6.7) 1)
1949	10.5	4.4	14.9	5.5)
1950	10.2	3.7	13.9	5.1	0.8
1951	11.1	3.1	14.2	5.3	1.1
1952	9.2	2.6	11.8	4.4	0.9
1953	9.7	2.7	12.4	4.6	1.1
1954	9.3	3.3	11.6	4.3	0.9
1955	8.8	1.8	10.6	3.9	0.5
1956	8.1	1.4	9.5	3.5	0.7
1957	7.9	1.3	9.2	3.4	0.7
1958	7.9	1.0	8.9	3.3	0.6
1959	7.3	0.9	8.2	3.0	0.7
1960	7.6	0.8	8.4	3.1	0.6

1) Not known.

The proportion of fuelwood in total cut of wood over 7cm top decreased from 40 per cent in 1947 to 9.8 in 1960.

It is at once evident that the forests of the GDR are not capable of supplying all the timber needed now, timber import decreased 39,000 cubic meters without bark in 1950 to 2,100 cubic meters without bark in 1960. There is great interest, too, in fine wood from tropical countries.

8. Wood Working and Processing Products

The use of wood in 1913 compared to 1955 is as follows:

	1955	1913 (German Empire)
Construct. timber	14 p.c.	30 p.c.
sleepers	3 "	1 "

poles	1 "	1 "
mine timbers	7 "	10 "
pulpwood	24 "	9 "
Furniture	11 "	3 "
packing material	7 "	8 "
other kinds of wood proc.	21 "	1 "
fuelwood	12 "	37 "
total	100 p.c.	100 p.c.

When comparing the quantitative production of the most important wood products using the following table it can be seen that is a trend towards decreasing the processing of sawn timber in favour of slab production and chemical decomposition of wood.

Table 4: *Production of Selective Products of Wood Working and Processing in 1936 (territory of GDR), 1950, 1955 and 1960*

	unit	1936	1950	1955	1960
sawn timber	1000m	3461	3510	2864	2483
sleepers	"	—	424	406	492
plywood and plywood sheets	"	—	10	20	24
hardboards	"	—	11	19	17
insulation boarding and hardboards	1000m ²	—	—	2415	5035
wood pulp	100t	466	178	220	245
sulphite pulp	"	162	192	252	283
sulphate pulp	"	4	30	43	38
paper	"	812	321	422	542
paperboard	"	330	171	229	268

9. Forest Minor Products

Besides the endeavours undertaken to reduce our figures to the level of the current increment and to improve the raw timber grading since 1956 attention was more and more paid to forest minor products. Of the

classical minor produce only the winning of tan bark and resin is of great importance to national economy. As can be seen from table 5, the winning of tan bark is steadily being offset by the increasing chemical winning of tanning substances.

Table 5: *Winning of Tan Bark and Resin in 1958-1960 in comparison with 1947 and 1950*

years	oak tan bark	spruce tan bark	total bark	pine raw balsam	spruce scrape resin	total resin
in tons						
1947	567	29630	30197	422	360	782
1947	468	24150	24618	3388	758	4146
1950	762	25211	25973	12820	368	13187
1959	345	23663	24008	13684	557	14241
1960	319	15601	15920	14865	555	15420

The classical minor produce as winning forest litter and forest pasturage are restricted to a large degree by legal regulations. On the other hand, the utilization of berries, medi-

cinal herbs, graminaceae for industrial purposes is being encouraged. In 1956 the government undertook measures for extending and increasing the forest minor produce. For

examples, processing of thin sorts of wood (wood under 7cm at the thick end) on stationary yards, fish breeding, establishment of osier plantations, fattening of poultry, harvesting of fur-bearing animals, winning of stones and sand have been organized in the State Forest Enterprises by experienced forestry people. These reserves of forestry production brought high yields. In order to utilize all reserves of forest production plans for the utilization of waste wood were adopted. Thus, in 1956 a total of 200,000 m³ waste wood until 1960 already 600,000 m³ could be processed (= 45 p.c. of the total)

10. Forest Gross Production

The GDR is a highly industrialized country. The portion of agriculture and forestry,

especially of forestry, in the national income is low. Though the forestry shares only 0.5 per cent in the gross production of the entire national economy, the land improvement tasks and performances of the forest (wind protection, protection against deterioration of soil and erosion, sanitary significance, recreation of people, influence on water balance, etc.) as well as the supply of raw timber should not be overlooked in our climatic zone. Unfortunately, it is impossible to define these matters economically by figures. As can be seen from table 6, since 1955 the gross production of forestry has increased tremendously. Besides improved timber conversion and a rise in prices for raw wood in 1956 this may be attributed to intensive forest minor production.

Table 6: *Gross Production of Forestry during the period 1955-1960 as a whole and in the nationally owned sector.*

year	total	nationally owned sector	
	in million German Mark	year	in million German Mark
1955	440	1955	235
1956	600	1956	385
1957	547	1957	903
1958	565	1958	921
1959	599	1959	462
1960	635	1960	495

11. Regeneration and Afforestation

Already during World War II restocking did not keep pace with the rate of cutting. With the beginning of the economic development plans in 1948 measures were taken to restock enormous cleared areas with the help of the population. Between 1950 and 1958 about 700,000 hectares were regenerated and restocked. In nationally owned forests this work was accomplished by 1956, in private and cooperative forests this aim was attained only in the recent time. These measures served to restock the denuded areas with tree species suitable to the site and in addition to this the most important tree

species spruce, pine, and beech. Furthermore, these measures served to mix them in hursts and groups for the purpose of reducing damage caused by storm and insects. Special attention was paid to the cultivation of quick growing tree species (poplars) in agricultural districts. Five million poplars have been planted outside the forests by the population on the basis of voluntary work. In a country with highly developed industry and agriculture like the GDR a considerable extension of the forest area cannot be awaited. More likely is a tendency towards diminution of forest area. Quicker growth of the individual tree species through

change of the natural conditions is out of question, too. It is, however, possible to raise the yields by intensifying and rationizing the forest measures as well as by better tending, fertilization, and meioration. For instance, between 1953 and 1958 an area of 72,700 hectares that makes 2.5 per cent of the total forest area was fertilized and in 1958 tending operations were performed on an area of 180,000 hectares that makes 6.1 per cent of the total area.

12. Forest Organization

In 1952 the forest organization of the GDR was subject to a fundamental change. The then existing administrative units, the so-called forest districts, with areas ranging from 2,000 to 4,000 hectares and working on the basis of a budget, were abolished.

In their place legally independent State Forest Enterprises were established with an area of 10,000 till 25,000 hectares in the low country. The functional organs ensure the recourse of all work done or to be done. Premiums are paid to the workers and employees of the enterprise. Indicators for the premiums are: yearly fulfilment of estimates and production plan with close observance of the prescribed quality. Allocations out of the return of the enterprise for various funds (e.g. culture, sports, holidays, entertainment funds) also depend upon the aforementioned indicators.

The administrative unit of a State Forest Enterprise is divided into the managing staff, production section, commercial section, planning and statistics section, staff and training section.

Table 7: *Structure of the State Forest Demonstration Enterprise at Tharandt*

Managing Staff

Administration

Production Section

Subsections:

utilization
 sylviculture
 planning and statistics

transport
 technology

labour economics

Commercial section

subsections:

marketing
 purchase and sale and
 material supply
 real estates and mensuration
 accounts

Bookkeeping section

subsections:

chief of bookkeeping
 wages and costs

finances

machine accounting

invoice-clerks

Personnel and training

section

Outdoor Work

5 head foresters

31 foresters

5 yard supervisors

1 nursery superv.

7 foresters for cooperative
 and private forests

1 workshop superv.

1 chief assistant

Cooperation with the Faculty of Forestry at Tharandt

(Scientific care of the managing staff and forest districts by the special institutes. Care of the experimental plots)

Vocational School

(forming part of the enterprise)

4 teachers

(theoretical training)

7 trainers

(practical work)

100 apprentices

(2-year-training)

The ranges of responsibility of a State Forest Enterprise comprise all activities from work in the forests to the purchase and sale of timber and include also timber transport from place of felling to the works, in which timber is processed. Each worker has the right to express his own opinion on matters concerning operational tasks and other problems through the Trade Union Organization.

The forest area of the GDR is divided into 96 State Forest Enterprises. All wood plants within and outside the forests are subject to management. Not a single tree is allowed to be cut without permission of the competent forester. The SFE is the sole purchaser and seller. The cooperative and private forests are administered by foresters of the State Forest Enterprises (SFE). Management of forests is performed by the forest owners within the bounds of legal regulations.

Twenty to twenty-five SFE are under the administration of a Forest District Enterprises. The central forest authority in Berlin is put under the control of the Agricultural Council of the GDR. The central forest authority consists of the sectors economics, product, planning and statistics, staff and training. Special schools and the Potsdam Institute for Forest Management and Site Reconnaissance with five branch-offices and a calculation centre are subordinate to the central authority. In the GDR forest management in the State Forest Enterprises is preceded by a reconnaissance and mapping technique for the purpose of determining the tree species that are most productive and economical with relation to the site.

13. *Labour and wages*

Substance and form of labour have changed very much in the SFE in comparison with former times. All details of operational and long-term plans are discussed on Trade Union meetings with the entire personnel and measures are taken which ensure fulfilment of state plans in due time.

In the agreement concluded between the Trade Union's council of forest enterprise and the managing director every year all rights and duties of the managing staff, employees, and production worker, the main tasks of the enterprise and measures for their solution, principles of wages and salary, measures for labour protection, bonus rules and social as well as cultural activities and engagements of the enterprise in relation to workers and employees are laid down. In all branches of forest activities workers are paid according to the work performed. Most of the forest operations are fully mechanized. In general, the attitude of the forest personnel towards work is exemplary. The work teams contend for the State Title "Team of Socialist Work". During the past year the technical and economical innovator and inventor movement has made good progress. The workers participate materially in the success of the enterprise and for this reason they are very much interested in the results of their enterprises. The cooperation between faculty and SFE is very good. In 1962 the number of persons occupied in forestry amount to 50,000 of whom 43,000 were engaged in the production. The average monthly income is 530 marks.

In 1956 the proportion of individual kinds of production in nationally owned forests in relation to total working hours was as follows:

raw timber and winning of bark	31 p.c.
reforestation, tending of forests	33 p.c.
transport	12 p.c.
resin tapping	6 p.c.
grading on yard	6 p.c.
minor produce	3 p.c.
miscellaneous	9 p.c.

14. *Forest legislation* 100 p.c.

In Germany legal regulation of forest, wood, and hunting affairs began very early. The first forest ordinances appeared 8 centuries ago. This applies, above all, to state and communal forests. The forest devasta-

Table 8: *Killing of game 1957 until 1960 and game figures of 1960*

game	killing of game				games figures 1960
	1957	1958	1959	1960	
red-deer	2851	5843	8025	7615	12374
among them stags	1193	2599	2908	2769	
fallow-deer	482	1137	1662	1726	3485
among them stags with shovel antlers	192	538	606	538	
roe-deer	25255	81494	137407	146803	140497
among them bucks	12791	33820	45047	58225	
black game	14587	21235	28351	27204	18921
hares	234708	271072	376336	379635	377799
rabbits	9167	8868	20911	22179	?
wild ducks/geese	21478	20356	32098	19614	?
foxes	11962	13664	29437	37960	?
dadgers	927	815	1310	1426	?
martens	599	844	2655	6205	?

tion Law of 1926 applies to all forest owners. It provides that an area which has been cut over in contravention of law and has not been reforested within two years according to correct forestry principles, will be reforested by the state, at the proprietor's expense. Management of forest as well as rights, duties, and tasks of the state forest enterprises are regulated by law in 1952, 1956 and 1958. The same applies to the administration of private and cooperatives forests by the SFE.

15. *Hunting*

In the GDR hunting is organized by the Hunting society. Hunting is allowed to be exercised individually or collectively. Each citizen has the right to become member of the hunting society, if he passes the hunting examination. The most significant kinds of game and the results of game killing in 1957-1960 can be taken from table 8.

16. *Training and qualification*

The educational standard required for the admission to a forest school or forest academy is the certificate of skilled forest worker. The examination for skilled forest workers

is passed at vocational schools forming of an enterprise. Length of course for leavers of secondary schools: 1 year. Length of course for leavers of other schools: 2 years. Continued professional training of skilled forest workers with the object of acquainting them with the tasks supervisors of nurseries, timber yards, and workshop as well as team leaders, power saw operators, cone pluckers, teachers for the training of apprentices is performed at special schools in courses lasting several weeks.

Training of medium technical staff (district foresters) is arranged at four special schools in the Republic. The two-year training terminates with the State Examination as forest engineer. Working in the capacity of managing director, high-forester, technologist, planners, production manager, silviculturist, economist for labour problems in operational affairs, and director or chief of department in superordinate places requires a 9-semester study at the Faculty of Forestry of the Dresden Polytechnical University. The degree conferred after 4½ years is certified Diplom-Forestingenieur. In regular intervals these come back to the faculty and in special courses they hear the last word of science in their special branch.

The yearly forest-show at the agricultural exhibition of the GDR in Leipzig-Markkleeberg serves as innovation centre of the exhibition and further serves to propagate the scientific and technical progress made in forestry. The entire system of training and continued professional training in the GDR is manifold and rests on a very liberal basis, but is well organized and, in effect, gratuitous. Ninety-eight percent of the students at the faculty of forestry receive a monthly scholarship (130-180 marks basic scholarship and 40-80 marks in compliance with results of learning).

Since 1945 a total of 1,200 students has been trained at the Tharandt Faculty of Forestry. The proportion of female students is about 5 percent and, thus, still very low. Owing to the generous support given to training and science the number of scientists of the Faculty of Forestry at Tharandt has risen to 108, 14 of whom are professors, 6 university lecturers, 41 scientific workers, 47 assistants, and 156 female technical assistants. At the faculty 12 institutes and 5 departments are engaged in research and training work: The Institutes of Forest Economics, Silviculture, Forest Organization, Forest Engineering, Forest Utilization, Mechanical Technology and Saw Milling, Forest Botany, Forest Zoology, Forest Yield, Plant Chemistry and Wood Research, Soil Science and Forest Ecology, Geodesy, Mathematics, Meteorology and Cli-

matology, further the Department of Forest Protection, Fume Damage, Social Science, Extra-Mural Studies, and Continued Professional Training. To attain a high quality in training and research, sufficient funds are available every year. Annually, the faculty receives about 1 million marks from the budget for wages and salaries, 25,000 marks fees for extraordinary lectures, lectures held by guests, etc. and approximately 150,000 marks for purchase of implements, books, materials, etc. — For students and scientists of the faculty room, equipment, library (50,000 volumes, part of them polyglot books, journals, and periodicals) as well as of the botanical garden (2,000 tree species) is gratuitous. Since 1945-, 106 scientists have taken doctor's degree and 11 persons qualified for a lectureship at the faculty.

The Faculty of Forestry at Tharandt is engaged not only in training and educating young forest academicians, but also in intensive research. On the country, the forest institutes of the German Academy of Agricultural Sciences in Eberswalde and Graupa deal only with research work. About 100 scientists and 250 employees work in the institute of the Academy. At the Tharandt Faculty special attention is paid to forest research work. At present 56 research subjects are being treated. Annually, 450,000 marks from the State Research Fund are available.

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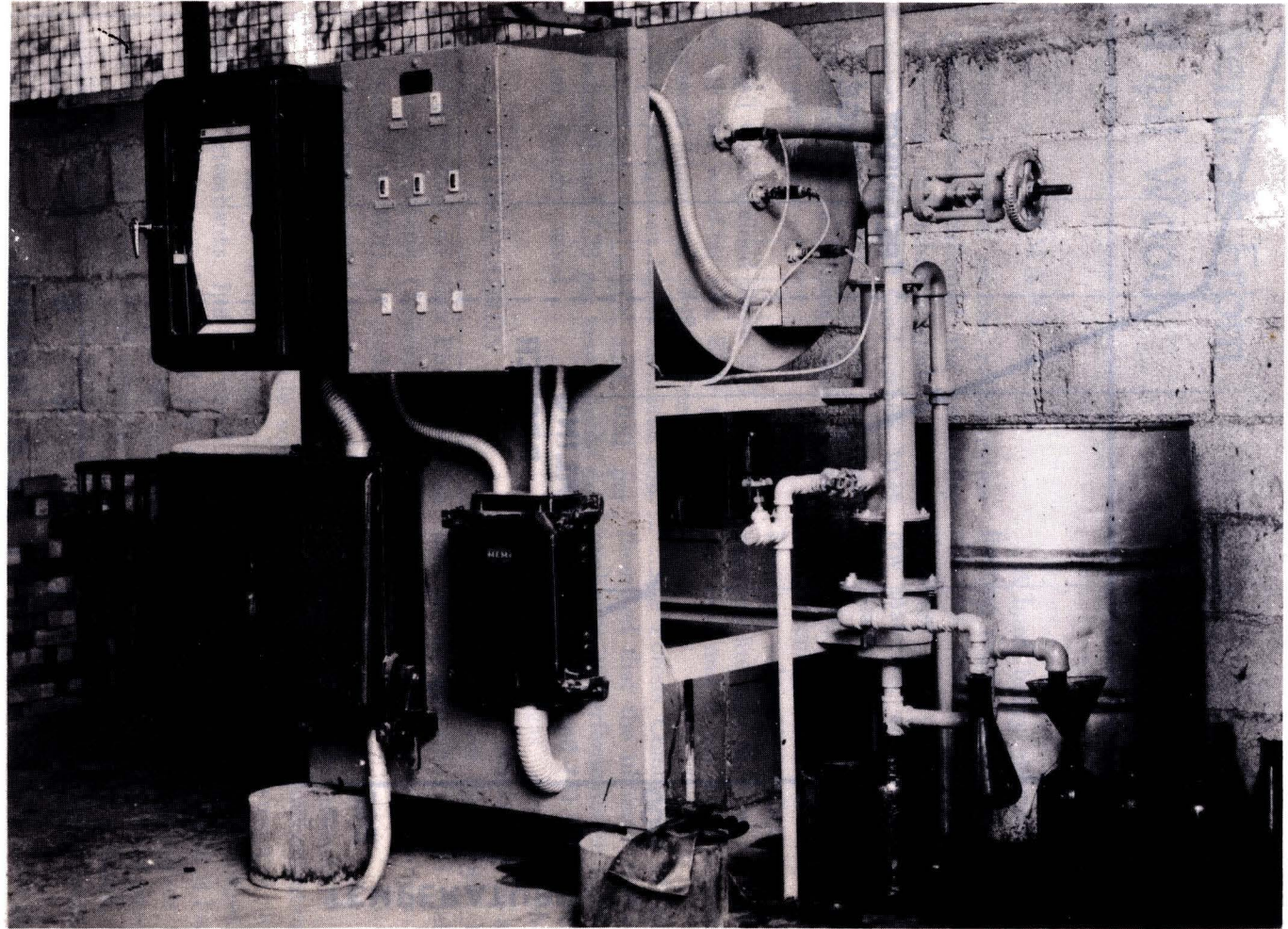


FIGURE 1.

The wood distillation retort showing the automatic temperature recorder-controller, the cooling chamber fitted with three thermocouples and the condensing unit.

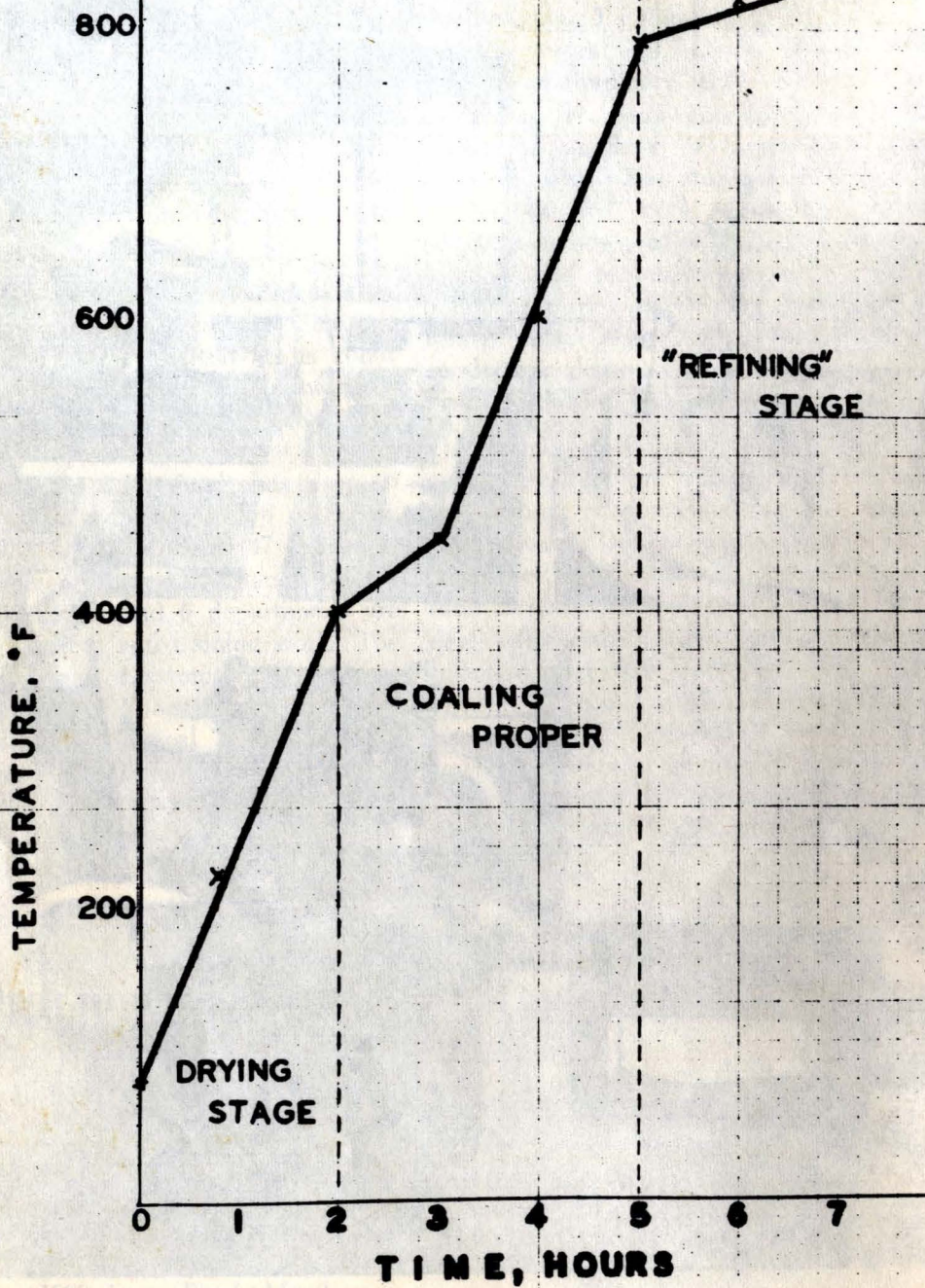


FIG. 2. THE CARBONIZATION PROCESS