

SOME MEDITERRANEAN FORESTS

II. SOUTHERN ITALY.

By A. N. SEXTON.

By Southern Italy is meant that part of the country that lies between 38° and 40° North latitude and between 3° and $4^{\circ} 30'$ East longitude, in other words the "big toe" and the "ball of the foot." The ball is formed by the Sila massif rising to 6,000 feet above sea level and the "big toe" by a continuation of the Appennines culminating in Montalto (6,417 feet) near the straits of Messina. The whole area, better known as Calabria, comprises three provinces, Catanzaro, Cosenza and Reggio Calabria. Each province takes its name, as is the Italian custom, from the principal city. The city of Reggio Calabria is both the capital and the most important port of the area. The second port, Crotona, in the province of Catanzaro, is a city famous in history as the dwelling place of Pythagoras during the greater part of his life. It is now the centre of the modern chemical industries and of the timber exporting trade.

The climate of Calabria is a continental one, with extremely hot dry summers and cold winters. Generally speaking the rainfall is low, ranging from under 16 inches at sea level to 100 inches in some of the more southern mountains, these areas of high rainfall are, however, small, the greater part of the timber bearing country lying between 40 and 60 inches of annual precipitation. The greater part of this precipitation occurs during the winter months of December-April and is largely in the form of snow. Generally speaking all that area above 3,000 feet is under snow from December to May while above 5,000 feet snowdrifts can be found at almost any season of the year. The lower limit of normal snowfall is about 2,500 feet although on occasions snow falls right to sea level.

The country is extremely rugged and the light soil, overlying the granitic skeleton of the mountains is very liable to both wind and water erosion. Water erosion is particularly severe as in spring the water from the rapidly melting snowfields often has to fall 5,000 feet in its 25 mile rush to the ocean; a rush whose erosive force is only too evident by the huge spews of gravel that spread over the narrow coastal plains wherever a stream issues from a mountain gorge.

Calabria is an area that has seen many ups and downs of civilisation. During the earlier part of the Christian era the whole coastal strip was dotted with Greek colonies, traces of which are still to be found in ruined buildings, place names and dialects. At a later date the country was overrun by Saracens who penetrated further inland and built hill towns that to-day bear names like Mormanno and Morano. In more recent times Albanians formed small colonies which persist to the present day. For example, in Spezzano Albanese, Albanian marriage customs are observed and the local dialect is unlike any other in Calabria. However nearly all these outside influences

were confined to the coastal belt, for as the heavily wooded highlands were unroaded, travel between towns was confined to the sea or the comparatively open sea coast. Travellers were welcomed in the mountains neither by the wolves nor by the mountain dwellers, but even in these early times the great commercial value of the Sila pine forests was recognised and at Rossano, Cariati and Sibari busy ship-yards used pine from the Sila to build vessels to fight against Carthage. However, it was not until the beginning of the present century when roads were pushed through the hills and gorges of the Sila that commercial exploitation really became significant, and about the beginning of the First World War timber extraction began on a large scale.

Periodical invasions by Greeks, Saracens and Romans have made the Calabrians a very mixed race. They are a short swarthy people, generally illiterate, and speaking an uncouth dialect that cannot be understood by northern Italians and in many cases by Calabrians of the next town. At the present they number about six millions. For a living they depend almost entirely on primary industries: fishing, farming, viticulture, olive growing and timber working. Industries are few, being represented by chemical and electrolytic zinc plants at Crotona, small sulphur refining plants in the hills, odd factories for the manufacture of cloth from broom, two or three tobacco-pipe factories and the large hydro-electric stations of the Sila.

In any such peasant country, forests must play a very large part in the life of the community. They must provide fuel for cooking and heating, either in the form of wood or charcoal; timber for houses, boat-building or trading; pasture for sheep, cattle and goats when the lowlands are parched by the hot summer sun. Finally they must furnish protection against winds and floods, and in so doing ensure that there is always a steady flow of water for the summer irrigation of all crops. The whole industrial system is also dependent on the forests and the power they can supply to the electric power stations. Modern industry has grown up in Calabria only because there is that abundance of electric power needed for chemical factories.

This importance is made clear by the forest ownership pattern of Calabria. The actual forest area is divided almost equally between the communes, the state and private owners, but the types of forests differ greatly. Communal forests take in most of the hardwood zones and are reserved for firewood, charcoal and grazing. Few soft-wood forests belong to communes and these alone are open to commercial exploitation. State forests are high elevation hardwood, pine or fir. Private ownership is in the hands of a comparatively few families, titled for the most part, the descendants of the leaders of the bands of brigands, who, in not too distant times, ruled the mountains. At the present time, although the pine, fir and beech forests are the most important commercially, it is almost certain that the beech and chestnut coppice and the chestnut fruit forests are the

more important economically, the first for fuel and grazing, the second for vineyard stakes and poles and the third for food. Oak forests are not far behind in economic value furnishing as they do charcoal, firewood and grazing.

All forests come under the control of the Forest Service and cutting restrictions are strict, especially in watershed areas and in steep country. Clear-cutting is forbidden except under special permit and no trees are allowed to be cut if their diameter breast high is less than 10 inches. In state and communal forests the trees are marked by the Forest Service before cutting, and timber cannot be felled without this marking. In private forests trees can be felled without being marked but the owner is subject to fines if he breaks the law, either by felling too heavily or by going below the 10 inch d.b.h. limit.

The forest proper, that is the high forest, can be divided into three main classes, mountain, sub-montane and coastal. The mountain type commences at about 2,600 feet, the normal lower limit of winter snowfall, and consists of pure stands of pine, beech, fir, chestnut and oak with occasional very small areas of hornbeam and alder. At various points in their altitudinal range the major species form mixed forests, often containing representatives of all species. The sub-montane forests are mostly oak and chestnut and chestnut coppice. The coastal forests consist of large areas of alder growing in almost pure stands on the river flats and Aleppo pine growing on fixed sandhills and gravel fans.

The forests of Calabria are not of the type with which we are familiar in New Zealand; they have neither the damp heavy undergrowth of our rain forests nor the dim shadowy light of our exotics. Calabrian forests are places of light and beauty; there is little undergrowth as we know it, there are no ferns, no vines; instead the open spaces are grassy and in the spring are carpeted with wild violets, narcissi and pansies while cyclamen and strawberries are to be found in the damper sites. The forest species are numerous and the most important being:

Botanical Name	Local Name	English Name
<i>Abies alba</i> Mill.	Abete bianco	Silver fir
<i>Carpinus betulus</i> L.	Carpino	Hornbeam
<i>Castanea sativa</i> Mill.	Castagno	Chestnut
<i>Fagus sylvatica</i> L.	Faggio	Beech
<i>Alnus glutinosa</i> Gaertn.	Ontano nero	Alder
<i>Pinus halepensis</i> Mill.	Pino d'Aleppo	Aleppo pine
<i>P. pinea</i> L.	Pino domestico	Stone pine
<i>P. nigra</i> var. <i>calabrica</i> Schneid.	Pino Silano	Corsican pine
<i>Quercus cerris</i> L.	Cerro	Turkey oak
<i>Q. robur</i> L.	Farnia	Pedunculate oak
<i>Q. petraea</i> Liebl.	Rovere	Sessile oak
<i>Q. ilex</i> L.	Leccio	Holm oak
<i>Q. suber</i> L.	Sughero	Cork oak

The forests of Pino Silano are probably the most important commercially and occur over a large area from 2,600 feet to 6,000 feet above sea-level, either as sporadic groups or as pure and mixed forests. The commonest mixtures are of beech and oak, although in the higher rainfall areas pine and fir form valuable forests. The zone of optimum growth of pine is above 3,000 feet, and in this zone the species regenerates freely. The trees are of good form, tall, straight and lightly branched. Individual trees have been reported as having a diameter breast high of over 80 inches; the writer has seen many of over 60 inches d.b.h. Trees with a d.b.h. of 40 inches, a total height of 130 feet, and a cubic volume of more than 350 cubic feet are not uncommon in mature stands (1).

To quote from Merendi (2):

"A tree of the first quality, it attains truly notable dimensions, as much for the length of the trunk as for the greatness of diameter. It has a fine long crown not over dense. The branches are relatively graceful and the needles are less rigid than those of Austrian pine. *The needles are definitely twisted even in early stages of the life of the tree* It is definitely less hardy than the Austrian pine and differs from that species in that it prefers the light soils deriving from the decomposition of the granitic rocks that form the skeletons of the Sila and of Aspromonte."

Below 3,000 feet the tree form becomes progressively poorer so that when the lower limit of growth is reached the species has taken on a form that is short and heavily branched while the needles tend to lose their characteristic twist and, with the subsequent lessening of reflection, appear darker, so the appearance of the tree changes towards that of Austrian pine.

Italian authorities (2, 3) do not consider that Pino Silano, as a whole, produces such good timber as the Corsican type, although in restricted localities the better class timber has the reddish tinge associated with the nail-holding properties of Corsican pine. The lighter coloured type, although having poor nail-holding properties, produces a good quality of cellulose (2).

Pino Silano self-prunes well and persistent branches are uncommon. Generally speaking it is found in small even-aged groups rather than in large stands. Small clear-cut groups have proved to be the most successful method of management in the Experimental State Forests of La Fossiateda and Foresta della Sila di Tasso. The most famous forests are in the areas of Sila Greca, Sila Grande, Sila Piccola, Serra San Bruno and Aspromonte.

The main commercial uses of Pino Silano are hand-squared timbers for bridging, building and naval construction; boards and scantlings for building, cases and furniture; round timbers for mining and for creosoting as power poles.

Beech forests seldom occur below 4,000 feet, while their optimum growth is attained above 5,000 feet. Areas of commercial beech forest are of necessity smaller than those of pine, the more important being those of Montenero, Botte Donato in Cosenza, Gariglione and Serra San Bruno in Catanzero and Aspromonte in Reggio Calabria. There are however many extensive coppices both of communal and state ownership from which much fine charcoal is produced.

The high forest trees attain a great size and produce a timber much superior in quality to that of English beech, it is more even in texture and easier to work.

Commercial uses of beech in Italy are: planks for furniture, coffins and turnery; shafts for farm carts, beams for ship building and, in wartime, sleepers for railways.

Oak forests are generally a mixture of Cerro, Farnia, Leccio and Rovere and of these species Cerro and Rovere are the two most highly prized for commercial purposes. The oak forests occur from 1,000 to 4,600 feet with an optimum growth about 2,300 feet. The most important forests are Longobucco, Campana and Boccigliero in Cosenza. From these forests, particularly that of Boccigliero, fine timbers of over 50 feet in length are extracted for naval shipyards.

Unlike pine and beech, oak is seldom sawn in saw-mills. The normal methods of manufacture are hand-squaring baulks or pit-sawing sleepers and heavy planks in the forest.

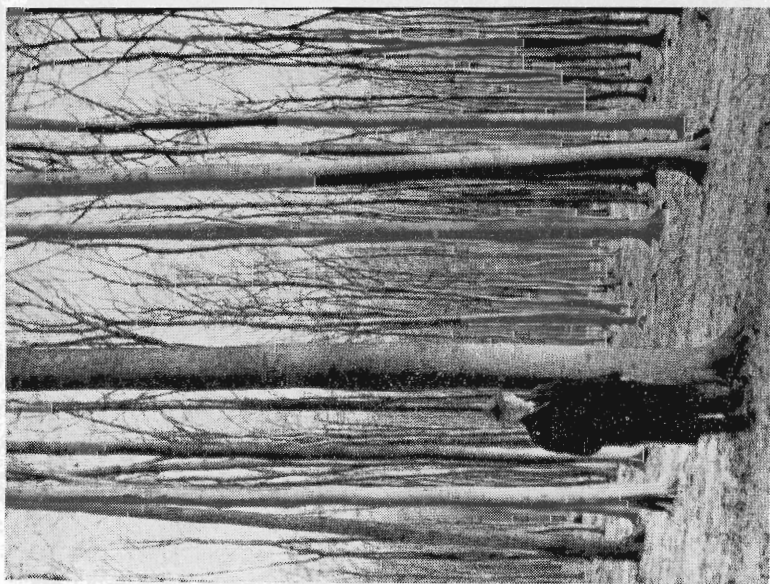
Most oak forests belong to the communes and cutting and grazing rights are jealously guarded both by the communal authorities and by the Forest Service.

Chestnut is found over large areas either as high forest or as coppice, and covers a greater area than any other species. Coppice with standards is not common. Chestnut, like oak, is manufactured in the forest and not in the sawmills. The larger poles have a ready market for telephone poles and the smaller for vineyard stakes. The greatest value of the chestnut forest is for fruit; dried chestnuts and chestnut flour form a very important part of the diet of the Calabrian peasant.

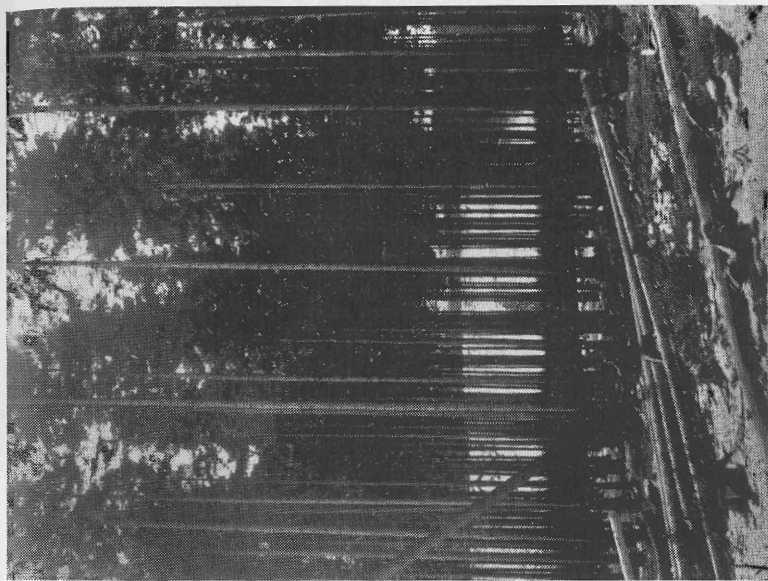
Silver fir is found above 3,500 feet in Calabria and is limited almost entirely to two forests, Aspromonte and Serra San Bruno in Reggio Calabria, though odd trees are found also on Sila Piccola and Monte Scuro in Cosenza. All of these areas are of high local rainfall, Aspromonte and Serra San Bruno being the only places in Calabria where the annual precipitation exceeds 80 inches. The trees attain a great height and diameter and at Aspromonte the writer saw some over 160 feet in height and in excess of 80 inches d.b.h.

The timber is of a fine quality, light, tough and retains a good colour when seasoned. It is in great demand for building and for naval shipyards.

Alder is found from sea level to about 4,000 feet but it is not important as a timber tree above 2,500 feet. The largest forest is



A Mature Stand of Beech before the First Regeneration Felling.



Felling Mature Spruce in the Harz Mountains.

Photos: A. L. Poole

that of the River Neto, though considerable amounts are also extracted from Mesuraca. The species is a minor one and, like chestnut and oak, is seldom manufactured by machinery. It reaches the markets either as short hand-squared baulks or heavy planks. The timber is light and tough and is used mostly in the manufacture of wooden-soled shoes and cheap furniture.

Aleppo pine occurs from sea-level to about 300 feet, mostly on fixed sandhills or gravel fans. In Calabria it is of no commercial or economic importance though in the neighbouring province of Lucania large forests form a valuable source of charcoal and firewood.

Summary.

This article describes the forests and forest economy of the Calabrian region of Southern Italy. The terrain is broken and erosion of the light soils of granitic origin a serious menace. The climate is continental with a precipitation that is generally low but reaches 40 to 60 inches per annum, mainly as winter snow, in much of the forested area. The region has had a long and varied history in which the forests have always played a significant part, but the rugged hinterland has been opened up for large scale exploitation only during the present century. The forests are still of vital importance to the rather backward peasants and the more recently developed industries dependent on hydro-electric power. Ownership of the forests is almost equally divided between the communes, private owners and the state, but all cutting is controlled by the Forest Service.

The high forest consists of a mountain type above 2,600 feet with *Pinus nigra* var. *calabrica*, *Fagus sylvatica*, *Abies alba*, *Castanea sativa* and *Quercus* spp. as the chief constituents mainly in pure stands, sub-montane forest of oak and chestnut with some chestnut coppice, and coastal forest with *Alnus glutinosa* on river flats and *P. halepensis* on sandhills and gravel fans. The different forest types, their utilization and management are described with particular reference to *P. nigra* var. *calabrica*. Though the pine, fir and beech forests are now the most important commercially, the beech and chestnut coppice and the chestnut fruit forests are probably of greater importance in the region's economy, firstly for fuel and grazing, secondly for vineyard stakes and poles and thirdly as food. Oak forests are also important sources of charcoal, firewood and grazing. The coastal *P. halepensis* is of little consequence.

References.

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