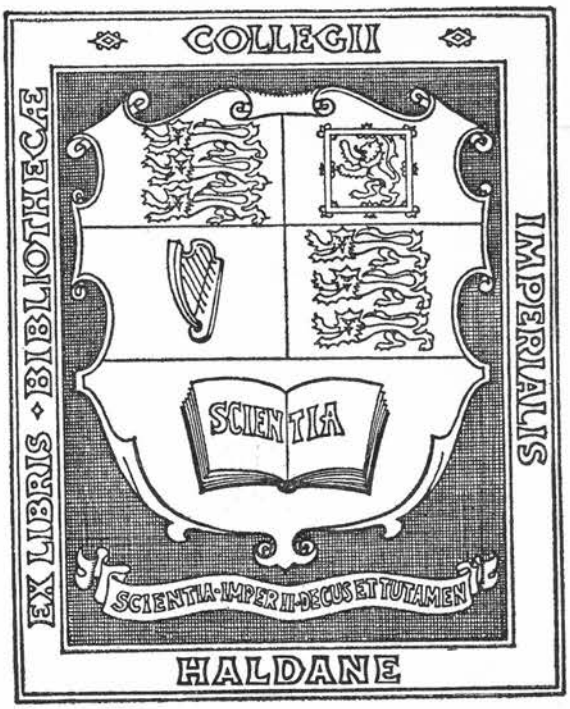
IMPERIAL COLLEGE

OF SCIENCE & TECHNOLOGY

GREECE

1959

THE EXPLORATION BOARD.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IMPERIAL COLLEGE

GREECE EXPEDITION

1959

Imperial College Exploration Board
Imperial College
London S W 7

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SECTION I

GENERAL REPORT

1. INTRODUCTION

In the past Expeditions from Imperial College have tended to visit tropical or arctic alpine areas leaving the Mediterranean region practically untouched. However, in view of the political situation it has not been possible to send expeditions to Albania or Algeria and much of the north Mediterranean coast is utterly spoilt by the tourist industry. Early in September 1958 several biologists decided to investigate the possibilities of running an expedition to either Corsica or Yugoslavia. The overall considerations in selecting these localities were the scope afforded to biological work in an area having both a sea coast and high mountains in close proximity. Preliminary plans went ahead in determining the various costs involved and it was found that either area would come within the financial limits of an expedition. After further investigations the small village of Zelenika on the Bay of Kotor, about twenty miles south of Dubrovnik, Yugoslavia, was selected as a possible sight for a base camp.

The programme of work was to consist of biological collecting and ecological investigations with a geological and geographical survey of the area, envisaged to cover a period of about two months with a ten man expedition.

2. PRELIMINARY ORGANISATION

Since the greater proportion of the expenditure incurred by an expedition is the cost of transport the length of stay can roughly be determined by the funds available taking into consideration the minimum length of time necessary to carry out the programme of work. Early in October a scientific programme was drawn up and the preparation of accurate estimates, the raising of finance and the food requirements of an expedition put in hand.

C.L.J. RYAN Miss H.C. TOMPSETT	Food.
R.G. STICKLAND	Transport and Equipment, Leader
M. STUART	Finance.

After consideration of these estimates it was decided that two months would be sufficient to carry out a satisfactory scientific programme within the expenditure range. To fulfil this programme and to gain an appreciable reduction in transport costs a party of at least ten was required, the following members being selected to complete the expedition's strength.

Miss S.A. BURBIDGE A.B. SPICER Miss M.M. WOODBURN	BOTANISTS	SCIENTIFIC EQUIPMENT AND LIASON TRANSPORT

P. CHEN, C. WELCH	ZOOLOGISTS	MEDICAL SUPPLIES
G.N. HAWKINS	GEOLOGIST	FREIGHT
E.E. GREEN, I.M. WALKER	ORNITHOLOGISTS	

The ornithologists were financially independent of the expedition and each spent about one month in the area, so covering the whole period of the stay.

Applications for financial and other support were submitted to the Imperial College Exploration Board, the Royal Geographical Society and Commercial Organisations.

Preparations were well advanced by the beginning of January 1959 with applications for financial support, already receiving backing from several organisations. Our biggest difficulty at this stage was the reticence of the Yugoslav Consular Officials, the Yugoslav Tourist Office and the Putrik representatives in Dubrovnik and Hercegravi. We were unable to discover how free we should be with respect to camping, and travelling in the mountains, the availability of fresh water and fuel, and the price thereof, and numerous other facts vitally necessary to the well-being of an expedition. Another factor not helping the situation was the difficulty of moving freight inside Yugoslavia where transport is extremely scarce. The lack of scientific literature, and maps of the area was more easily overcome with the co-operation

of the Royal Geographical Society and the Royal Botanic Gardens Library. At this point I should like to thank Dr. W.B. Turrill and Mr. Meikle (The Royal Botanic Gardens, Kew) and T.N. Savory Esq. for their generous help in these and many other respects. After several fruitless visits to the Yugoslav Embassy, Consulate and Tourist Office, official representations were made by the College Authorities on our behalf and from a sea of conflicting reports varying from "Yugoslavia is as free as Great Britain" to "You will be required to camp in an official camp site every night for approximately £1 per head per night" and "Any nights you wish to have away from the camp site must be stated before entering Yugoslavia", we decided that we would know little more by July. However, as it was now late January a firm decision had to be taken. Reluctantly it was decided that it would be imprudent and possibly impracticable to continue with the expedition to Zelenika.

As plans were well advanced and much knowledge of the Balkans had been obtained, plans to revert to a site in Corsica were delayed in order to allow Messrs. Stuart and Stickland to draw up alternative proposals. After exhaustive investigations two other sites, a village on the island of Eubora, or the Skyia area of a peninsula near Salonika, both in Greece, were discussed, together with Corsica. The principal considerations leading to the selection of these two areas in Greece were the more abundant vegetation due to a cooler climate than the mainland and the fact that a student party could travel by rail from London to

Athens for as little as £22 return per head. Finally a revised application was submitted to the Imperial College Exploration Board for the expedition to be re-routed to Metoukhian, a small mountain village in Central Euboea. This application received support allowing the expedition to continue with the minimum of re-organisation.

As a result of preliminary enquiries we were put in touch with F. Noel-Baker Esq., M.P. who has interests in Euboea and considerable knowledge of the area. On his advice the actual siting of the base camp was altered to Pharacla, a small village to the north of Metoukhian where local conditions with regard to water and food would be better. This village was also served by a rough track, sufficiently wide to allow lorries to pass in the drier weather. With the help of Mr. Noel Baker, the arrangements in Greece and our dealings with the Greek Authorities in London were greatly speeded up and in fact after a somewhat unpromising start, the detailed organisation, described below, section by section, progressed smoothly.

The Scientific Programme was finalised as outlined below and members of the expedition visited the Royal Botanic Gardens Library and Herbarium at Kew to obtain a general idea of the flora likely to be encounted. Help with detailed preparations was also freely given by Dr. K. H. Rechinger of the Natural History Museum, Vienna, V.H. Heyward, Liverpool University and the staff at Imperial College, to all of whom we are most grateful.

3. OUTLINE OF SCIENTIFIC PROGRAMME

The programme was purposely designed to cover a greater range than would be possible so that however much the local conditions differed from the more generalised type of environment for the area, enough background would have been prepared to carry out useful work.

BOTANICAL.

1. The collection and drying of specimens for identification at the Herbarium, The Royal Botanic Gardens, Kew.
2. A comparison of the mountain flora with that described by the Imperial College Norway Expedition, 1958.
3. The description of the various types of vegetation.
4. The investigation and description of the agricultural methods and economically useful plants.
5. An investigation of crop diseases present in the area.
6. To attempt a statistical investigation into plant performance if a suitable plant could be found.
7. The investigation of invasion among plant communities.

ZOOLOGICAL.

1. To compile a general account of the larger animals living on the island.
2. To make a survey of the insects present with emphasis on those connected with economically important crops and in particular the olive plant.
3. To survey the littoral crustacian forms with particular reference to the ecological factors associated with their distribution.

4. The collection of two groups of insects for detailed study in Great Britain.

ORNITHOLOGICAL

1. To compile a check list of the birds for the island of Euboea.
2. To study the migrationary movements of birds in the Balkans.

GEOLOGICAL

1. The preparation of a concise geographical and geological survey of a selected representative area.
2. The investigation of the structure and composition of the superficial layers of soil to aid botanical zonation.

METEOROLOGICAL

1. The recording of temperature and rainfall over the period.
2. The compilation of all available evidence to give an idea of the normal weather throughout the year.

4. TRAVEL

a) Outward Journey

The expedition left Victoria Station at 10.30 a.m. on Wednesday, 15th July, complete apart from two members who remained behind to iron out a slight difficulty arising over non-registration of two pack-frames.

They rejoined the main party at Dover, and after the usual custom formalities, the channel steamer was boarded. We disembarked after an uneventful hour and a half, and settled ourselves in the train which was due to leave for Paris almost at once.

Paris, Gare de Lyon, was reached on time at 7 p.m. and as there were two hours to spare before the train was due to depart, members took the opportunity to have a stroll and a little liquid refreshment. At 9 p.m. precisely the train pulled out; couchettes had been booked for the first night and we settled down for a sound night's sleep: no such luck, however, for there were passport checks at Vallorbe (Fr.), Lausanne (Sw.), Brigue (Sw.) and Domodossola (It.), all during the early hours of the morning.

At 10 a.m. on Thursday, only thirteen hours after leaving Paris, we reached Venice, where we were obliged to change to the solitary 'Athens' coach which was already full and with several passengers standing in the corridor. Notwithstanding, eleven bodies and thirty large baggages were wedged into the sections at the ends of two carriages and the corrugated section between.

Thirty six hours were to be spent thus, with constant

interruptions from coffee-vendors, ticket-punchers, customs officials, and people trying to reach the W.C.

At 3 p.m. the Yugoslav frontier was reached, and after lengthy declaration forms had been filled in - in duplicate, we set off at a snail's pace, which was to be maintained until the Greek border.

The tedium of the journey across Yugoslavia was broken only by a minor set-to with one of the many gold-braided officials concerning a W.C. which had temporarily been put out of use by our pile of equipment blocking the door. Attempts were made to sleep on the floor of the corridor until one member of the party nearly lost an ear under the boot of an excessively large Yugoslav.

An interesting point noted throughout Yugoslavia was that at every station we passed through, a red-capped gentleman (the station master presumably), was standing to attention and saluting: whether he was saluting the engine-driver, Marshal Tito, or us we never discovered.

Ljubljana in the north fairly closely resembled Austrian towns and the countryside of steep mountains, pine forests and fast flowing rivers was quite attractive. However, as we progressed into the country the atmosphere of depression and silence began to assert itself and Zagreb appeared most sombre. People got on at most stations, few with smiling faces, and rather resignedly sat down where they could, to face many hours of uncomfortable travel. After leaving Zagreb the mountains opened out into plains, which stretched without hedge, fence or habitation as far as the eye

could see. Sunflower and Maize were grown quite extensively and cereal fields were exceedingly large. No sign of mechanisation was to be seen, whole families cutting, binding and shocking the corn by hand.

None of us know what to expect in Belgrade and since we had several hours to wait people wandered round the town after a rather sparing breakfast in the station 'restaurant'. After crossing the cobbled main street with the occasional clattering trams and an enormous concrete barn type building on one side (the relic of a People's Exhibition possibly, but being put to little use at present) we arrived at the market place. In an attempt to find some fresh fruit we visited a large number of stalls, all of which had almost identical produce displayed and all at exactly the same price per commodity. No doubt, a competitive price could have been obtained had we known the language but the image of the market epitomized the outward character of the country.

As the train passed through wide, flat plains and rugged mountains the habitation became more squalid and more depressing. Skopje station, however, had baskets of flowers suspended from the roof, the first non-utilitarian signs in Yugoslavia. A Greek, studying shipbuilding at a yard in Sunderland explained that the atmosphere in this part of the country was unrecognizably freer than when he passed through on his way to Great Britain in 1954.

To a backcloth of mountains and a spectacular electric storm we pulled up at the border check point on the Yugoslav side just before dark. Hoping to stretch our legs, we opened the

carriage doors only to be ordered back by strong armed youths without uniforms who virtually guarded the train and examined the underneath with torch light. This unusual feature of no uniforms added further forboding to this dismal post and so one can imagine the contrast when the train was greeted at the Greek Customs Post with bright lights, music blaring gaily. Although there must have been a tendency to be obsessed with the 'Iron Curtain' the feeling of freedom was so great that one has to experience it to believe it.

After a brief spell in some vacated 1st Class seats we arrived at Thessalonika, where we were told to move to a 'local' 2nd Class carriage in which the seats were hard, upright, but most welcome. At this point, a most amusing incident occurred. One of our female members received a proposal of marriage from a greasy, intoxicated, middle-aged Greek. This was tactfully declined and the Greek generously allowed the lady of his choice two months in which to reconsider.

11.40 a.m. on Saturday, 18th, and we had arrived in Athens. (Chris Ryan and Roger Stickland had left us at Inoi and proceeded directly to Pharacla, our final destination, to set up camp in readiness for the arrival of the main group).

The night was spent in the youth-hostel and we arose early next morning and made our way to the station in time to catch the train for Chalkis, on Euboea, at 8.35 a.m. An hour and a half later we were enjoying a meal in Chalkis while waiting for our bus (a twenty seater single-decker of ca. 1920

vintage) to depart. When we alighted at Kirinthos after some two and a half hours journey over unmade roads and mountain ranges, the bus was carrying more than forty passengers, three to each seat and the centre gangway packed tight as well.

From Kirinthos we were taken by lorry the remaining four or five miles to Pharsala, which we reached at 4 p.m. on Sunday 19th July, some one hundred and two hours after leaving London.

b) Athens

While in Greece it would have been unfortunate to leave without visiting Athens and members of the expedition visited the city in three groups at different times, for a few days. Each group stayed at the Youth Hostel, 19 Acadamias Street, where accommodation was cramped, not especially clean and with restricted cooking facilities. However, for only three shillings a night one could stay there indefinitely, the only essential requirement being a sleeping bag, for the few beds were soon occupied. By preparing our own breakfast and having a reasonable evening meal in one of the numerous restaurants, cheap fresh fruit sufficed at mid-day. The restaurants were generally cheap and very pleasant, although one trip, "to sample the food as the Greeks eat it", ended up in a side street restaurant, which although clean managed to produce a choice of only goats meat in rice soup or rissoles. Neither dish was well cooked and both turned out to be expensive.

Generally it was hotter and drier in Athens than in Pharacla and since they appeared to be taking up every pavement at the same time, the air was usually filled with dust as the mid-day wind sprang up. The 'new town' which consisted of the quite large shops and restaurants flanking the three principle, wide streets and two squares was not unlike other European cities but in the side streets and older parts the Byzantine style was very apparent, especially in the numerous churches which were often at crossroads. Suburbs stretched back inland to the airport and down to Piraeus on the coast which incidentally is linked to the city centre by a single line 'tube' railway. Due to its geographical position Athens has few communicating roads and most of the numerous large American cars and taxis which crowded the city were rarely seen far outside.

Naturally the old city with numerous marks of both Roman and Athens City State culture proved fascinating. While the Roman remains were often impressive for size, the simple elegance of the Greek monuments with the Parthenon supreme gave a better idea of bygone architectural skill. With the exception of the Athenian Agora or old business area which lies below the Acropolis, few areas or buildings have been really examined and useful guide books and maps were difficult to obtain. Apart from 'spivs' selling rather poor guide books there were few of interest and we would have done better to have bought a few in London beforehand. However, the Son et Lumiere performance which took place on the Acropolis and was viewed from the Pryx was probably the

most memorable experience. Once a week performances were given in English, or American as we were corrected, and the story of the City State of Athens depicted. The winding climb through Agare cacti to the small church where a constant vigil is kept on the summit of the hycabetus, was almost as intriguing after dark.

Language presented no problems as most official organisations had English speaking employees and French was fairly widespread as well.

The character of Athens was more apparent in the past than in the future, although it is now far more than a town at the foot of the Acropolis.

c) Journeys on the Mainland

On August 21st two ornithologists, Ian Walker and Ted Green together with Colin Welch set out for the famous beauty spot of Delphi. The reason for this visit was not so much to see the remains of the Greek settlement there as to seek out the Lammergeyer or Bearded Vulture. We had learned, before leaving England, that this area was one of the habitats frequented by this rare vulture. Once off the island of Euboea hitch-hiking was the means of locomotion. This not only provided a cheap means of transport but by travelling in the back of open lorries, etc. it gave one an uninterrupted view of the surrounding countryside. The road from Thebes to Levadia ran along the foot of a long

craggy range. No mantle of pine trees here, just barren rocky slopes with only the valley floors cultivated. After Levadia Mount Parnassos, 8,067 ft., could be seen in the distance immersed in cloud. To reach Delphi the road had to wind in a never-ending series of hairpin bends through the mountains. Delphi itself was set on the top of a cliff at the foot of Parnassos. Below the town vast olive groves stretched to the Gulf of Corinth. Behind the town towered the rocky slopes of Parnassos. During our stay we made camp in a man-made cave near the Ad Stadium and only learnt later that it was an old tomb. Our vigil for the Lammergeier lasted until 24th August without reward, although a pair of Black Vultures were seen. Leaving Delphi by bus we had travelled twenty-four kilometres towards Levadia when the bird we had been hunting, the rarest vulture in Europe, flew alongside the bus. At Levadia Green returned to Pharakla whilst Walker and Welch turned North through more mountainous desert, steadily rising until just south of Lavina the road dropped some 3,000 ft. in a series of hairpin bends onto the river valley in which Lavina is situated. North of Lavina the road rose again into the mountains, but thirty-five kilometres further on they ceased in an abrupt line and the road dropped onto the plains of Thessaly which stretched to the North as far as the eye could see. Here the scattered communities were able to farm the plains which had sufficient water for their crops of animals. We stayed the night on the outskirts of the small

town of Farsala, with its chimneys bedecked with old stork's nests. The next day we passed on through Larisa and out of the fertile plains and climbed back into the mountainous desert where the only fertile ground was a narrow strip either side of a dry river valley. At one remote village in the middle of nowhere a Greek policeman waved down a lorry and asked the driver to give a poor Englishman a lift, which he did. South-west of Elasson we passed through a very agricultural valley where wheat was being laid in the sun to dry. Tobacco was, however, the main crop and everywhere tobacco leaves could be seen hung up to dry in various shades of green and brown. From Elasson to Kozani the route all lay above 3,000 ft. and the land was of little use for agriculture. To the East we could see the towering peak of Mount Olympus. The next day the road carried on in a series of hairpin bends over the mountainous ridges until Veria was reached. This town had a small reservoir to supply it; a rare sight in Greece. North of Veria the road passed over a well watered, fertile plain with at least one large river and canal traversing it. Here were the peach orchards of Greece. The scenery gradually changed to a type of sandy heathland until Thessaloniki was reached. For the journey from Kozani the two of us had split up in order to obtain lifts. Ian showed great diplomacy and obtained a lift from a bus, free of charge. I had to be content with an army officer's jeep and the pillion of a motorcycle. By sheer good fortune we met each other in Salonika, with a population of

about half a million people. By evening, after three days travelling from Delphi, we reached the shores of Lake Langadhas, an hour's walk from the village of Kavalari and the nearest fresh water. We camped on a small sandy delta of a large river which entered the west end of the lake, although at that time it was completely dry. The lake, one of the few permanent ones in Greece, was very shallow and the water level was seen to retreat slightly during our brief stay on its shores. As the lake dried up so hundreds of fresh water mussels were either exposed or made easy prey for the wading birds, as a result the shore was littered with empty shells. We collected our water from the lake at dawn before the local cattle and sheep were brought down to be watered. At this time of the day the water was as clear as it was ever going to be and after straining off most unwanted invertebrates the water was purified. As neither of us experienced any ill effects we cannot praise too highly the Halazone sterilizing tablets used. We were more than rewarded for our long journey since this lake appeared to be a feeding point on the route of the countless numbers of birds that migrate down the coasts of Greece from the Balkans and Central Europe on their way to Africa. As it turned out we had picked the best spot on the lake for bird watching since it was at this end, sheltered by an encircling bed of tall reeds, that the birds congregated. The water was always covered with Mallard and Coot, whilst overhead hundreds of Sand Martins dived and circled. On the sandy shore Hooded Crows were always numerous

and Yellow Wagtails rose in clouds when disturbed. For anyone trying to classify these birds it would have been a nightmare, since it was difficult to pick out any two that were identical.

The local people who owned the cattle and sheep lived like nomads in small rush huts about half a mile from the lake. Here they led a very poor existence tending their crops, mainly tomatoes, lucerne and maize. But despite their poverty they were always presenting us with watermelons and tomatoes. All they wanted in return was to be able to sit and watch us preparing meals, eating, writing notes and attempting to make conversation with them. It cannot be often that the children in particular, have an opportunity of watching two Englishmen setting up their castle on their own doorstep.

We left the lake on the fourth day, pausing near a small stream to watch some village men digging clay and moulding it into bricks which were placed in the sun to dry. Once in Thessalaniki I had to wait seven and a half hours for the next train south. This overnight journey took ten hours followed by a two hour wait at Cinch Junction. Once at Chalkis there followed a three and a quarter hour wait for a bus, where by chance I paired up with two of the party returning from Athens and I eventually reached Pharakla after thirty hours travelling.

After travelling t e length of the country one meets a good cross section of the people and everywhere I was overwhelmed by their friendly nature and generosity. Only one lorry driver

held any resentment towards the British as a result of the disturbances in Cyprus. To all others, whenever you mentioned that you were English, they were all smiles and willing to do anything for you.

f) Rhodes

Originally we had no intention of visiting Rhodes, but, Dr. Catsimbas, the plant pathologist at Athens University, had offered to take two of us, Margaret Woodburn and Roger Stickland to the island of Poros. He was to take a South African pathologist round the orange groves there and suggested that we join the party. unfortunately, when we arrived at the University to meet him we discovered that there had been a last minute change in the arrangements and that Dr. Catsimbas had already left. We had been looking forward to this trip as a chance, not only to learn something of the diseases which afflict orange trees and to meet these pathologists, but also as a chance to see something of an island more truly cut off from the mainland than Euboea. It seemed worthwile to arrange to go by ourselves to Rhodes, particularly as this would mean going further East than either of us had ever been before.

The next boat left the following afternoon. We took a surprisingly clean and modern underground train to Piraeus, where we bought our tickets at a cost of about 23 shillings

each for the single deck class journey. We boarded the ship along with the peasant women with their baskets of chickens, Greek soldiers, a Turkish taxi-driver and German students, and sailed in the late afternoon. The evening was fine and the sea calm, so we elected to sleep on the open deck rather than the covered one which was very crowded and smelt appalling. We realised why it was so much more crowded when we awoke to find ourselves soaked with salt spray. The wind had risen and was whipping the tops of the waves onto the deck. Never was I more grateful for my sleeping bag.

Morning came and the ship weighed anchor off the island of Kos and we had our first chance of seeing an island of the Greek archipelago at fairly close quarters. We were surprised to find how closely the terrain resembled that of the mainland. Dry, rocky hills with only a faint tinge of dusty green greeted our eyes. A village clung to the steep slopes, its blue-washed houses perched on either side of the inlet. Where was the lush green vegetation we had been expecting? We realised then just how different the Mediterranean Sea is from the Atlantic Ocean. A motor boat came out to our ship with more passengers, as the ship is the local bus service between the more important islands. During the day we stopped again off Kalymnos and then passed the even more rocky and barren Turkish coast and at last Rhodes appeared as a long, low strip of land which seemed disappointing at first sight. Second sight was more rewarding as the harbour with its three windmills and the old walled town

dominated by the Palace of the GrandMasters came into view.

We landed and wandered into the old town not knowing how we could find somewhere cheap to stay. A drunk shouted at us and out ran a young Turk to apologise for him. This boy spoke a few words of English and led us to a house in the old quarter through cobbled alleyways where we could stay for about half a crown a night each. To our surprise we found the luxury of running water in the passage and even electric light which so delighted us that we hardly noticed the cockroaches which scuttled away when it was switched on.

We arrived at about three-thirty in the afternoon so there was time that day to see some of the old town and to visit a Turkish mosque with the guidance of our friend, who was able to tell us a little about it. Next day we visited the Ikaros pottery where plates, vases and ornaments were being made in the same patterns as were used in ancient times. From there we went on to Kalithea, a watering place by the sea en route for the Acropolis at Lindos. On the way we were befriended by a Greek American student who pointed out to us the little courtyards outside some of the houses which are paved with tiny grey and black pebbles set in intricate patterns, and told us how villages used to be built of low houses in bowls in the hills away from the sea so that they should be invisible to marauding corsairs. At Lindos we saw the ancient ruins which were incredibly beautiful against the ethereal blue sea, and the remains of a castle and other buildings which showed several different types of

building material had been used in successive ages to reconstruct on the old foundations. We saw inside a heavily decorated Byzantine church too.

As well as seeing the places of archaeological and historic interest on the island we were able to get some idea of the vegetation though most of the island that we saw was intensively cultivated. Orange groves were there with the oranges just beginning to turn colour and of course the inevitable vineyards, olive groves and plantations of figs covered the hillsides. As well as fruit trees there were pines, poplars, cypresses and an occasional plane tree. The general appearance of the vegetation of the island was rather less arid than we expected after seeing the other islands on the way from Athens. At one time the island had been densely wooded and the national emblem comes from that period. We were curious to know the purpose of an area near the sea which was divided up into small squares by some sort of wattle fencing and were told that the fences provide shelter for early tomatoes which are exported to Greece. It is apparently not only in having lower taxes than the mainland that Rhodes resembles the Channel Islands. Other plants that one can hardly fail to see on Rhodes are the gorgeously coloured bouganvillea and hibiscus which trail over many of the old buildings making a beautiful contrast with the stone, some of which closely resembles Cotswold Stone.

There was unfortunately no time to visit the valley of the butterflies or to climb to any of the higher ground where a more

natural vegetation might have been observed, before we had to set sail again for Piraeus. The temptation to remain on this beautiful island was very strong, and the idea of continuing further East to see how the stages of transition which we had already observed as we approached Asia , developed as the Bosphorus was crossed was almost irresistable. However, we felt that it was time to return to Pharacla. The voyage back was very similar to that going and we arrived in Athens at about 4 p.m. on 29th August four days after leaving, and continued our journey to Pharacla next day, arriving in the early evening.

5. EXPEDITION DIARY

A detailed diary was kept, the more interesting points being summarised in the following paragraphs.

Chris Ryan and Roger Stickland, after an uneventful trip from Inoi, arrived at Chalkis soon after lunch on 18th July. Mr. Noel Baker had previously made arrangements for them to be taken by a Mr. Skias from Chalkis to Pharacla and it only remained for them to find their driver. However, in a comparatively large town with no knowledge of Greek this seemed formidable, but having crossed the swing bridge over the narrow sea separating the mainland from the town centre and enquiring as best they could at a kiosk and from several chaps, two or three small boys came to their rescue and led them through the back streets to a garage. There, after glasses of water all round, a heavy lorry was produced so that the two of them could squeeze in beside the driver in relative comfort. An hour later they were high up on a mountain road which had wound steadily up through the pine woods ever since leaving the small plain behind Chalkis, when the driver suddenly pulled into the side at a welcome spring. The temperature, only 80 degrees in the shade and the [illegible] clouds of red dust from the road had taken their toll. Going down was little better, but after a further hour the fields in a river valley ripe with maize introduced them to Achmetaga, a very pleasant small town in the heart of Euboea. From this point the road followed an intermittant river, bypassed Mandoudhion and continued North. They left the road at Kirinthos and made off along a track just wide enough for the lorry, up and through a very small village, eventually passing under some Plane

trees, before entering the village square at Pharacla.

After a meal of local tomatoes, bread and oozo (their first and not very encouraging introduction to the local resinated wine) procured by Christopher Machonechi, an engineer with Mr. Noel Baker, they settled down to wait for the freight.

Only one third of the crates arrived when another lorry drew up in a cloud of dust later on in the afternoon and it was learned for the first time over the antique telephone in the village that customs difficulties had been experienced - (referred to in detail under 'Freight'). However, they were by then too tired to worry about sums of 30,000 drachmae being mentioned as dues and the relatively cheap method of obtaining the rest of the freight, namely by a "little consideration". The next morning after a very good night in sleeping bags despite the heat, they set about constructing a fire, washing place, etc. and checking the privileged stores which were in reasonable shape despite the broken cases.

In the mid-afternoon the remainder of the party arrived and Roger Stickland returned with the lorry to Actmetaga to try and arrange customs clearance for the remaining freight. After a trip to the Church of St. John of Russia and a wander round the Turkish Refugee Quarter he was entertained by Mrs. Noel Baker. During the succeeding two days contact by telephone and letter was maintained with the British Embassy with no positive results. On returning to Pharacla plans were made to spread the exisiting stores over a longer period and to purchase more food locally. The scientific programme was started and specimens collected and pressed. Apart

from a very heavy rain storm which filled the dry river bed outside the village, converting it to a torrent and explaining the use of the precarious footbridge, normal routine proceeded smoothly. Several "wooding sessions" were embarked upon to the obvious joy of the local boys, who were only too willing to carry the dead pine trunks to the village and exhibit their strength with a cross-cut. Till this point the practice had been to burn, crush and bury used tins, but after seeing the villagers watching with obvious anguish we took to leaving them outside the camp, where they soon vanished. At no time did we come across the slightest attempt to touch or remove anything not obviously given away.

In spite of the rough country and the temperature, many treks had been made to the mountain foothills and the "Hogs Back" had been climbed on several occasions. By the 27th July most of the members had become acclimatized to the heat and it was decided to climb Oros de Kandili, about twelve miles away and approximately 4,000 feet above sea level. At 5.30 a.m. five members, including one girl, set out along a valley running due South which enabled them to cover several miles in the shadow of the hill before the sun rose too high. Although there were levels for part of the way running from the disused magnasite mines, the tracks were far from easy and after arriving high up on "K_2", the party was obliged to drop down onto the col separating them from Kandili. The sight of Golden Eagles and Egyptian Vultures soaring overhead and passing over the surrounding countryside was in itself worth the journey.

From the col, where the pine trees had apparently been cut down and left some years ago, and regeneration had been prevented partly by goats and partly by the climate, the scrub covered limestone rose steeply towards the summit some 400 feet above. After some fifty feet of this prickly oak and rugged rock, the cliff suddenly gave way to a fir wood with sparse undergrowth, a few brown foxgloves and limestone outcrops. With steady climbing through the deep leaf litter, the summit was reached about mid-day. Strangely enough a strong clump of stinging nettles dominated the area. To the West was the mainland, separated by a few miles of sea the edge of which was about 200 yards away and 4,000 feet below, while the intensely white summits of the neighbouring peaks contrasted with the grey appearance of the pine woods back along the way the party had travelled.

The next morning the butcher and builder arrived at the village. The butcher on his mule with three goats trailing behind rode round the village square and stopped under a very leafy fig tree. After a good deal of shouting a cluster of women gathered round the tree and proceeded to haggle. Not long after the group dispersed to the fields to work and the butcher slit the throats of two goats, skinned them and hung up the various "cuts" on the branches of the tree. The entrails disposed of by the dogs, the butcher then set to to clean the skins, have his lunch and adjourn to the local inn, of which Pharacla had three, to cater for a population of about two hundred, and finally to sleep. When the women returned from the fields they took away their meat and hung it up prior to roasting

it in a charcoal bee-hive oven. The butcher departed considerably the better for his oozo and with one goat behind him.

The builder set up under a large walnut tree and proceeded to plane large lengths of timber in preparation for the construction of a house at the top end of the village.

Towards midnight of the same day a fantastic noise broke out in the village, to the accompaniment of the ringing of the church bells. A lean-to, the hen and pig quarters beside a house, had caught fire. With the large expanses of forest and the very dry climate, fires are exceeding hazardous in the area and the greatest precautions are taken. On this occasion the women went to fetch loose earth, and water from the springs, while the men pulled out wooden posts and roof tiles from the shed. Others clambered on neighbouring roofs to get a better view. Eventually the fire was smothered and the house-owner rebuilt his lean-to the next day.

Several of the party had by then visited other parts of the island, including periods spent near Actmetaga, Kiarisi and Kironia. Not long after the temperature reached 115°F in the shade, which successfully halted everybody and resulted in a day swimming and relaxing in Limni. This delightful town five miles away, but over a 2000 feet mountain range, had not been visited by the majority of villagers in Pharacla, many of whom had never seen the sea.

Towards the middle of August an epidemic of food poisoning hit the camp, which was eventually traced to mice spreading Salmonella sp amongst the food. Although most people were affected at one time or another, entero-vioform usually provided a better and quicker

cure than the villagers' method of an overdose of oozo accompanied by after-effects which made one forget the cause of the trouble. By now two or three of the more self conscious men on the expedition thought it was time to have a hair-cut. After the rather amateurish attempts of other members, two decided to risk the local "barber". Having been successfully parted from his occupation of turning maize cobs in the sun, the barber set to with an ancient pair of scissors and a very sharp cut-throat razor, and made exceptionally good jobs for a price that was rather less than the cost of a glass of oozo. About this time the paraffin supply began to get low, and a tour of the village sampling and smelling all likely liquids, finished up with a trip to Mandoudhin to purchase a further supply. Neat benzene offered to the expedition by an enterprising lad with a motor-cycle was not much use, as was shown him when he became over insistent.

On 17th August four members visited Athens and stayed there for a few days to be accompanied back by the other ornithologist, Ted Green, who replaced Ian Walker, by then on his way back to England.

The chief concern then was not so much food, the remaining crates having arrived after a month producing an unfortunate surplus, but water. Three of the four village springs had dried up and the surrounding villages were in a similar plight, one village having moved out altogether. In spite of this, the villagers always insisted that the expedition should have first draw on the water whenever the spring was visited, which caused much embarrassment and at one time the thought of a move-out to another site.

However, this was solved by more people having their visit to Athens at one time than was planned and economising with the remaining supply. Soon after one of the springs flowed again when the pipes had been unblocked.

According to the Greek Law the party should have registered with the police after one month's stay in Greece. However, this was easier said than done. The village had no police and Strophilia, three miles away had only one constable who used to cover a beat extending the length of the tarmac high street; from one end of the village to the other. Always impeccably dressed he never ventured into the dust beyond the village limits and used a local inn as his headquarters. Although on more than one occasion a little difference of opinion occurred he never lost his complete composure and was unable, or unwilling, to register us. Equally futile situations existed in Actmetaga and Limni.

Since the passports were never checked anyway we were not in any hurry but decided that, while in Athens we would go through the formalities to avoid any border complications when leaving for home. For an extortionate rate the necessary photograph could be obtained from an enterprising photographer who had set up at the corner of the street almost outside the Registry Office, and an impressive stamp added to the passports.

Several disagreements arose with the postman who appeared on a horse outside one of the inns ever third day, over the interpretation of 1 gr. and the relative merits of the large Greek stamps which almost covered the address when stuck on by

him. Although no doubt some of our letters were a little over the mark one or two British stamps given to a local boy sufficiently distracted the postman; who then seemed perfectly satisfied.

During this period scientific work had continued and many of the village lads brought in specimens ranging from a little owl and minute beetles to cultivated melons and unusual grasses. Although many specimens were damaged we were able to record the finds and until birds with broken wings began to appear we offered them every encouragement. Towards the end of August, after everybody had visited Athens preliminary arrangements for the return journey were made and most of the specimens packed away. One further excursion by four members to Kriavisi, the only marsh region encountered in the vicinity, provided more specimens of a type differing markedly from the rest of the island. A delightful 'lily' fully four feet in height and bearing no leaves dominated parts of the marsh. During the night a strong Easterly wind whipped up the sea and almost swamped their sleeping quarters high up at the back of the beach but the return journey to Pharacla produced an unusual sight, an apple and pear 'orchard' close to a small dwelling.

The early days in September were taken up with rounding off the scientific programmes and intensive seed collecting, which resulted in many different species of seed and bulb being packed for later germination.

Food and equipment were sorted out and provisions for the return journey packed. With the exception of the scientific instruments, much of the equipment, including tools was sold locally

where it was virtually unobtainable. Probably one of the most astonishing and unfortunately real sights of our entire stay occured when we gave away our surplus food and packing cases to the villagers. In fact a tin of cooking fat was almost unheard of and some of the villagers asked us what it was for and how to use it. It was not until we saw the joy in the eyes of a villager who had virtually nothing, when given a small 'luxury', that we began to appreciate our 'necessities'.

The night of the 6th September produced heavy rains which apart from laying the dust turned the tracks into quagmires. Two of the girls left for Athens during the day, customs lists were drawn up for the freight and two of the villagers approached with regard to the loan of mules for the trip to Strophilia next morning. George and Joe agreed to help us take the kit on their two mules, even when the hour of 4 a.m. was mentioned.

Swimming trunks and plimsoles proved the best outfit when after nailing down the last crates we loaded our kit onto the mules and set out along the muddy track to Strophilia just before dawn on 7th September. After arriving muddy but dry at the village centre George refused to accept anything but a few cigarettes for his trouble and disappeared back the way he had come leading the mules with him to end a very pleasant friendship.

Looking a little more civilised after a quick change, and with the sun now well up, we boarded the bus for Chalchis and Athens. The few hours left to us in Athens proved almost too hot and it was with mixed feelings that we boarded the Orient Express at 8.45 p.m. and watched the floodlit Acropolis disappear into the darkness as we headed North.

6. EQUIPMENT REPORT

The provision of equipment was based on the following envisaged arrangements.

A reasonably accessible permanent base camp would be established from which smaller parties would move out for varying lengths of time. The base camp would depend primarily on timber for fuel although this would probably need supplementing with paraffin stores. All other camps would require paraffin fuel. Water would be scarce, would need to be stored and possibly heat purified. All items must be sufficiently light and small to man handle over rough country if necessary.

A list of equipment taken out by the expedition is set out below with an indication of the source of supply.

Equipment	Origin
Tents	
1 Arctic Guinea (2-man)	Exploration Board.
1 B Meade (2)	
1 C Meade (2)	
1 D Meade (2)	
1 Three man tent	
2 two man tents	Personal
2 U.S. Army Bivowacs	
1 Repair kit + spare pegs + spare nylon guylines.	

Equipment	Origin
1 Water Container with lid.	Purchased or Personal Equipment
3 Polythene bowls	
Corkscrew, Bottle opener.	

Tools

1 Large pick axe	Various sources, mainly Personal.
1 Small pick axe	
1 Spade	
1 Shovel	
2 Small trowels	
1 Felling axe	
2 Small axes	
1 Carborundum stone	
1 File	
2 Mallets	
1 Cold chisel	
1 Hammer	
1 Jemmy bar	
1 Small bow saw	
1 Screwdriver	
Nails	

Ropes	Exploration Board.
2 Climbing ropes	

Equipment	Origin
General	
1 Tilley Lamp	Exploration Board.
1000 yds. wire	Purchased
5 sacks	
2 Funnels	
5 Hanks rope	
String	
1 Compass (Prismatic)	Exploration Board.
2 Doz. candles	Purchased.
3 rolls wire wool	
2 Tins abrasive powder	
Detergent.	

The items listed above proved sufficient and the only shortage occured in the supply of candles. This, however, could easily have been avoided by an alteration in sleeping hours. Polythene bowls and buckets, although bulky were more than an asset with the intermittent and general shortage of water. General small primus stores and sets of billie cans were taken, all of which were utilised by the various trips away from camp.

We were very fortunate with timber fuel. The extensive pine forests on the island, in contrast to the barren tracts on the mainland, provided ample fuel very close to the camp. The fire risk was, however, very

considerable and a hut in the village was burnt down one night. Various crosscut saws loaned to us by the villagers were very useful for cutting up tree trunks and an expedition to this type of country would be well advised to include at least a second large toothed saw among its equipment.

If possible the "local or at least national" names for such items as paraffin and methylated spirit should be discovered prior to moving off. Had we known that paraffin is "petrol", or the Greek equivalent, we should have saved several hours of misunderstanding and frustration.

The equipment was packed amongst the food to give maximum protection and save any waste packaging material. With the intention of setting up a base camp we packed to reduce bulk to a minimum without worrying too much about the contents of any one crate. Naturally, semi-perishables and other relatively susceptible items were separated. An alternative method, of packing food for one week in a crate or group of crates and leaving the rest unopened was not thought suitable for this type of expedition splitting into small parties.

The contents, cubic capicity and weight of each crate was recorded for shipping and customs clearance.

For the return journey the equipment made up almost the entire freight and despite the somewhat improvised crates all the equipment reached Great Britain safely. An

expendable hammer and nails proved essential for this purpose.

The equipment, both in quantity and kind was adequate for this particular expedition.

7. PERSONAL TRANSPORT

The personal transport was arranged through Messrs. Sewell & Crowther of South Kensington. From them we discovered that to travel to Greece by train would be cheaper than to go by plane or by a combination of train and boat, and it would be a lot quicker than going by boat all the way. We found too that cheap rail fares were available to us as we were a party of eleven students, this being the smallest number eligible for the reduced rates. The only remaining decision as far as travel to Athens was concerned was then which train to take - the Tauern Express, or the Simplon Orient Express. The former follows a route from Ostend through Belgium and Germany, while the latter takes a more southerly course through France and Switzerland; both follow the same tracks after reaching Italy. We decided on the Simplon Orient Express as it was very slightly cheaper and there seemed no special advantage in taking the Tauern Express, though later we wondered if it might have been cleaner.

The journey to Athens was to take three days and three nights which is a long time to sit up in a train, so we enquired about couchettes. Unfortunately, these only stay with the train as far as Venice on the way out, and from Venice to Calais on the way back. If one travels as far as Venice by couchette one cannot reserve a seat from there to Athens. Seats are only reserved from London or

from Paris, on the outgoing journey. We decided to risk not being able to find seats at Venice for the sake of being able to start with one good nights rest. This we later discovered was the biggest mistake we made on the travelling arrangements, for not only were we completely unable to find a single seat at Venice or indeed until we had reached Thessalonika, but our "good night's sleep" was anything but peaceful, on account of the customs checks, the ticket collectors and the passport control men, who seemed to have spaced their visits very carefully to give maximum sleep disturbance. A further drawback to this mode of travel across Europe turned out to be that we could not put any of our luggage in a goods van, and of course we had no luggage racks from Venice to Thessalonika so we had to stack it all up in the corridor thus obstructing the entrance to one of the toilets, which was not only inconvenient but drove a certain Yugoslav train official, armed with pistol, into a fury. Rucksacks, kitbags and packframes were soon strewn over the floor. This completed, he seemed satisfied and departed only to return again when it had all been replaced when he seemed even more angry and tried to induce the leader of the party to get off the train. However, this blew over without any serious consequences.

Because the train journey was to take so long we decided that the main party should spend a night in a youth hostel in Athens before continuing to Pharacla, but

that two people should drop off the Express at the junction of Inoi and make their way straight to Pharacla to begin setting up such things as a fire and washing and draining facilities. At Athens the main party was met by an agent of Mr. Francis Noel Baker and a lorry. Most of the baggage went off to Pharacla on the lorry, while we and the agent went in search of our supposedly reserved places in the Youth hostel. However, something had gone wrong and there appeared to be no reservations, but fortunatdy we managed to find beds or places on the floor at an annexe, and there,in stiflingly hot rooms we slept the sleep of the dead. The reservations had been confirmed by letter at least a month previously but as we were to find out later, this was only one instance of "efficiency" in foreign parts.

Next morning at eight o'clock we learnt the folly of not checking over our tickets in detail while still in London, for we found that they had not been made out via Athens so, after a long argument in French, we had to pay again to go on the next lap of the journey to Chalkis. It should be mentioned here. however, that we were unable to obtain our tickets until the day prior to leaving , a practice not to be recommended. We arrived at Chalkis at about eleven thirty in the morning, this small town straddling the channel between the mainland and the island of Euboea, being the nearest point to Pharacla that the

railway reaches. There we were met by another of Mr. Noel Baker's men who had booked seats on the bus from Chalkis to Kirinthos. A hair-raising bus journey across the mountains on a winding, unmetalled road, crammed in, three to a seat with many people standing and as many paper bags distributed as on a Channel Boat in a gale. After a few more miles of flatter road we got out of the bus and were met by Mrs. Noel Baker, with a lorry and a Land Rover, who took us on the last lap, over a rough cart track to Pharacla where we rejoined Chris Ryan and Roger Stickland.

The return journey was rather easier, except that the main party left Pharacla before dawn the morning after a torrential rainstorm, and had to contend with thick mud on the track from Pharacla to Strofilia where they were to catch the bus. However, they were helped by the loan of some mules from the villagers which carried some of the baggage. The train journey was relatively luxurious as we had been able to book seats from Athens to Venice, because Athens is the terminus for one part of the Simplon Orient Express, and from Venice onwards we had couchettes once again. Unfortunately, the carriage in which our seats were booked was infested with lice, and our D.D.T. powder had long since been exhausted - there was nothing for it but to submit to being eaten alive until we reached England.

I think the three lessons we learnt from this were, firstly to check over the tickets very carefully before

leaving England; secondly, to make absolutely certain of seat reservations; thirdly, to make sure of adequate supplies of D.D.T. or even better some more rapidly working insecticide. Perhaps a fourth thing which we might have done would have been to make some enquiries about facilities for storing luggage on the train, though whether this would have done any good I don't know.

On reflection, several points, which may be of use to others, come to mind. To any party travelling past Venice it would probably be best to take the Tauern Express on the outward journey and the Simplon Orient Express for the return journey. Although our baggage was restricted to a rucksac and a small bag for food per person a piece, this proved to be excessive where people think nothing of standing in a corridor for 48 hours and baggage waggons don't exist, apparently. A sleeping bag however more than proved itself especially for sleeping on corridor floors in preference to lice ridden seats.

The overall cost of personal transport was £267.6.0. which although higher than estimated was acceptable. This excess expenditure was caused by the high cost of travel in Greece and the apparent absence of the student rates quoted by the Greek Authorities in Great Britain.

8. FINANCE

Income	£ s d.	Expenditure	£ s. d.
Personal contributions (£40 x 10)	400. 0. 0.	Travel outwards and return	267. 6. 0.
Fisons Ltd.	20. 0. 0.	Freight to Athens	20.19. 0.
Thompson & Morgan Ltd.	20. 0. 0.	Freight to London	11.12. 3.
		Freight within Greece	12.10. 0.
Iceland Exp'n (Food)	10. 0. 0.	Travel within Greece	7.10. 0.
	450. 0. 0.	Food in Gt. Britain	148.12. 0.
		Visas, Equipment, Food in Greece	25.18. 0.
		Customs Dues in Greece	32.10. 0.
Expl'n. Board	78.17. 3.	Expenses(postage etc.)	2. 0. 0.
	£528.17. 3.		£528.17. 3.

M. Stuart.

Original estimates of cost were drawn up after some investigation and were as follows:-

Personal Travel	£220
Food	160
Freight	120
Sundries	50
	£550

Personal contributions of £40 per person were decided upon and efforts were made to raise the balance of £150.

Applications were made to the Imperial College Exploration Board, the Royal Geographical Society and a considerable number of industrial concerns and organizations. As a result £125 was raised including £75 from the Imperial College Exploration Board who also agreed to cover all necessary insurance. The generosity of a number of food firms, acknowledged elsewhere, enabled us to keep within our estimated cost for this item. The above position was considered to be satisfactory and the planning of the expedition was put on a firm footing.

The plan to restrict expeditions in Greece to a minimum was rather disrupted by the difficulties experienced with the customs and the traditional custom of 'tipping' necessary to have anything done outside the country districts. We had hoped to travel at reduced cost in Greece by virtue of our being students, as mentioned in some of the Greek Information Office Literature. However, although this led us to believe the reduction of 20% applied on rail and road, the actual concessions were limited entirely to the railway and for journeys costing over 40 dr. (10/-). Official Student Cards issued by the authorities in Athens proved to be useless.

Local food was very cheap and fresh food was purchased to supplement the diet without embarrassing the account.

The cost of transport was reduced by using a party ticket, which worked out at less than £25 per head, return,

including travel by 'bus' in Euboea. Generosity on the part of two shipping lines enabled us to move our freight of approximately 1 ton to Greece and back for approximately £30. It is unlikely that the transport costs could have been reduced by using our own transport and they did in fact fall well within our estimate.

From the financial point of view the expedition was very satisfactory.

9. FOOD REPORT

The food programme was based on supplying eleven people for sixty days with breakfast, a packed lunch and an evening meal, allowance being made for the hot climate and the need to provide supplies for numerous short expeditions to other localities. Three of these days were to include the homeward journey. Due to the difficulty in determining the exact food situation in Pharacla and to the probable inability of a village to support eleven people for two months it was decided to take from England a complete diet which could be supplemented by local fruit and vegetables if these were available.

With the aid of the Norway Expedition Report and advice gratefully received from Miss B. Falkingham, a list of supplies were drawn up, costed and ordered. This was kept within an overall allocation of £150 reasonably easily. Difficulties in obtaining dehydrated meat forced us to order more tinned meat, a very expensive item. Apparently the dehydrated fish and meat were only an experimental product manufactured for a few years.

The majority of the food had arrived by mid-June and was packed into tea chests together with the equipment to produce the least possible bulk, ignoring all other considerations with exception of an attempt to balance the weight and prevent contamination of perishables. As a precaution two small crates of food were packed separately

n: carried with the party to Greece. These contained two days rations for the whole party.

Unfortunately, we had trouble with the customs at Piraeus and half of our supplies were held up for two weeks. This caused an initial period of restricted rations, and a surplus to build up when the remainder arrived. Partly for this reason and also to over-estimating the initial quantities the surplus was larger than anticipated. Fortunately, we were able to use this usefully to obtain help in the village and hence to save financially. One or two tins of cooking fat were far more valuable to the villagers than the equivalent in drachmae.

A weekly check of the rations was made and menus adjusted accordingly. This was made necessary by the initial hold-up of food and the numerous small parties leaving the base camp for periods ranging from two days to two weeks. Many of the quantity directions on the packets proved to be unsuitable for camp cooking and should anyone be planning a similar trip they might do worse than to test some of the products without the aid of refrigerators, ovens, etc.

Some fresh food was purchased from various tradesmen who brought their food etc. to the village on the back of donkeys. Among the items purchased were tomatoes, melons, grapes, spratts' and goats' meat. The 'butcher' arrived leading three goats and set up under a large fig tree in the village. When he had sufficient orders he slaughtered

and hung up the goat, leaving the entrails for the village dogs and set about cleaning the skin. Sometime later he portioned off the meat and weighed it out. On the occasions when we purchased goats meat we were fortunate enough to have the aid of a villager both in selecting and cooking a cut. As is usually the case meat and fish proved relatively expensive compared with fruit and vegetables.

The normal camp cooking was carried out on an open fire supplemented by primus stoves. Local pine and plane provided good fuel as there was ample fallen timber in the forests. Green timber was absolutely useless in both cases. The length of the day governed meal times with two cooks each day preparing breakfast for 6a.m. and an evening meal for 6 p.m. Sandwiches for a packed lunch were prepared by the cooks each evening for the following day. Generally some form of drink was made at about 8 p.m. By the end of the stay the evening meal had been advanced to 5.30 p.m. so that clearing up could be completed in daylight, by about 7 p.m.

A few useful comments on the menus may prove helpful. Even though the climate was hot, porridge was popular at breakfast and in fact cooked food was appreciated quite as much as cold alternatives. Generally speaking, the snack meal was less necessary than in Norway and one could easily subsist on a little fruit, water and perhaps

single ryvita sandwich at mid-day. The total quantity of food necessary in the two very different climates proved to be very similar under similar conditions of activity and it was only on particularly hot(or cold days, Norway) that any significant change in appetite became apparent.

Apart from several loaves of 'ceremonial bread' given to us by the villagers, no bread was used. The local bread was exceedingly dense and heavy and a two inch cube proved more than sufficient for the largest appetite at one meal.

As usual, variety was the difficulty and such items as sultanas and peanut butter were welcomed. Honey, although popular, was too runny to be useful and instant pudding proved to be more difficult to prepare than instant whip. Macaroni and rice, though very popular when properly cooked are difficult to prepare without constant care. The absence of dehydrated meat, available to previous expeditions, was never properly overcome and had a reasonable range of canned meat and fish been purchased the costs would have been out of all proportion.

Once cans were opened the food soon "went off" especially vegetables. Margarine and cooking fat, however, proved excellent, maintaining their consistency and remaining in very good condition even a week after opening.

Quite a lot of water was drunk in the first two weeks but gradual acclimatisation reduced the need. Lemonade

powder proved excellent for making the water more palatable but caused more water to be drunk than was necessary. Most local villages had a reasonable supply of fresh water but the high goat density in the island made most other water unfit for drinking, although on a few occasions some was used with purifying tablets having apparently no adverse results.

Adexicol and Nicorbin vitamin pills were taken by some members of the party, although they were probably not necessary, in addition to the local fruit and vegetables.

A point which may be of interest - We were in the habit of burning, flattening and burying empty cans and tins, and it was not until we had been there two weeks that we realised that even the smallest baked bean tin was of the utmost value to the villagers, and in fact when we left at least thirty women gathered round and almost fought over a few small empty tins.

The local food supply turned out to be more plentiful than we had anticipated, and in consequence more food was purchased locally than was really necessary to supplement our rations.

In conclusion several points for and against taking a complete set of rations may be made. Firstly had we decided on the information available, to purchase a substantial proportion of our supplies locally several difficulties would have been encountered. Meat was very

expensive, only perishables were available and the supply was erratic. Foraging trips at least every two days would have been necessary, taking up at least two members' time; and trips away from camp for more than two days would have been difficult to supply. However, by taking our own food we saved a considerable waste of time and energy, but incurred more expense as a result. On balance, the cost of the food could have been reduced by more experienced estimating, but the practice of taking the expeditions own food to uncertain areas would seem to be both advisable and prudent.

A list of food, including quantitiy, origin, cost and comments, together with specimen menus and a table of equivalents is set out below.

Food	Quantity	Make	Cost	Use	Comments
BOVRIL	2x1lb.bottles			XSby 1lb.	Excellent conc.food, lasted well.
BAKED BEANS	144x½lbtins	Crosse & Blackwell	3.19.6.	J.S.	Popular cold as well as hot.
BARS-Rubix	230	Mapletons		XS by 100	Very unpopular. Provided for snack lunches but rarely taken
banana fruitarian cake					
-Kendal Mint	77	Romney	2.9.0.	N.S.	V.popular, much preferred to other bars.
BISCUITS-Polo	2x5¼lb.tins			J.S.	Variety popular, but
Small Rich Tea	4x3½lb "			XS by 2tins	unnecessary luxury.
Ginger	1x4½lb "	Carrs	4.13.6.	S.	Half the quality would
Digestive	3x4¼lb "				have been sufficient.
Shortcake	3x5lb "				Tins useful.
Ovaltine	30x½lb.pkts	Ovaltine			Not popular with some.
Cream Crakers	14x5¼lb.tins	Huntley & Palmer	6.7.6.	XS by 7tins	Not popular, easily broken use for snack meals limited. Too dry.
Kavli Crispbread	38x12oz.pkts	Kavli	-	S	Fairly popular
Ryvita	46x1lb.tins	Ryvita	3.3.9.	J.S.	V.popular, good for sandwiches. Tins very useful.
CAKE	14	Huntley & Palmer	9.19.9.	J.S.	5 became mouldy before use while still in sealed cellophane. Very popular.
CHEESE	41x½lb.tin	Kavli	-	J.S.	Both, processed cheese,
	74x12oz.tin	Kraft	7.14.10.	J.S.	popular
CEREALS - Oats	10x1½lb.pkts	Quaker	-	N.S.	Either very popular
Sugar Puffs	57x12oz.pkts	Quaker		J.S.	or disliked.

Food	Quantity	Make	Cost	Use	Comments
Shredded Wheat	18 pkts.	Nabisco Foods	-	J.S.	Popular as alternative to Puffs.
COFFEE	6x6oz.tins	Maxwell House		J.S.	Very popular.
COOKING FAT	60x½lb.tins	Van den Burg	3.0.3.	XS by 30tins	Excellent
CURRY	1x2lb. tin			XS by 1½lb.	Popular the few times it was used.
CUSTARD	3x1lb.tin	Chivers		XS by 1 tin	
EGG-dehydrated	20lbs	Felton & Crepin	10.8.0	XS by 4lbs.	Deconstituted well, taste good.
FISH - herrings in sauce	24x14oz.tins	Crosse & Blackwell	1.16.8.	XS by 4tins	Eaten at beginning, then became less popular.
FLOUR	10x4lb tins	McDougall	-	XS by 9tins	Very little required for cooking that was done.
FRUIT dried apricots	2lbs.	Landauer	1 6.3.	J.S.	Required much soaking, popular
pineapple	24x½lb.tin		1.16.9.		
pears	17x½lb.tin	Maconochies	1.10.5.	S	Very popular, double quantity would have been eaten, but expensive and very heavy.
peaches	8x½lb.tin		1.16.8.		
fruit salad	22x. ½lb.tin	Chivers	2 10.0.		

Food	Quantity	Make	Cost	Use	Comments
GLUCOSE tablets	15x1oz.pkts	Browne & Polson, Dextrosol	3.0.0.	N.S.	Popular when away from base, double quantity would have been used.
HONEY	14x1lb.tin	Chivers		XS by 5tins	Not very popular, too runny for use in snack meals
HORLICKS	14x1lb.tin		-	XS by 5tins	Popular but excess taken.
INSTANT PUDDING	45x3pt.pkts	Browne & Polson	1.15.6.	XS by 18pkts	Difficult to make up, much greater concentration needed than on packet directions.
JAM	9x1lb.	Chivers		N.S. by 3tins	Variety provided.
MEAT- Luncheon	47x12oz.tins	Fray Bentos	4.19.0.	N.S.	Not popular
- corned beef	39x12oz.tins	" "	6.9.4.	N.S.	More popular
MACARONI	12x1lbpkts	Sunpat	-12.10.	XS by 4pkts	Difficult to cook well
MARGARINE	200x½lb tins	Stork	8.9.8.	XS by 70tins	Taste good, kept well at high temperatures.
MARMALADE	33x1lb.tin	Chivers		XS by 12 tins	Popular
MARMITE	9x4oz.tins	Marmite	-	J.S.	
MILK- dehydrated	7x1lb.tin	Ostermilk	-	XS by 2tins	Unpopular, poor taste, difficult reconstitution.
	19x5lb	Nespray		S	Reconstituted well and easily, good taste, popular throughout. Less than stated amount is required. Tins useful

Food	Quantity	Make	Cost	Use	Comments
LEMONADE powder	2x7lb.tins	Mitre		NS by 2tins	Very popular
OVALTINE	7x2lb.tins	Wander	-	XS by 3 tins	
PEANUT BUTTER	5lb.	Mapleton		NS by 5lbs	Popular
PEPPER	3oz.			J.S.	
PICKLE- Sweet-mixed Piccalilli	24x12oz bts. 6x10½ozbts.	Crosse& Blackwell	2.13.4. 19.6.	XS by 10bottles XS by 3bottles	Popular to make meals more tasty.
RICE -uncooked	20lbs.	Thames Rice Milling Co.	-	XS by 10lbs.	Very little used, difficult to cook well
cooked	36x1lb.tin	Wilts United Dairies	1.19.0.	J.S.	Very popular, creamy and tasty.
SALT	5x1½lb.tin	Cerebos	-	XS by 1tin	
SAUCE	12tubes	Heddies	-	XS by 8tubes	Not popular
SOUP	175 pkts.	Swiss-Knorr	-	J.S.	Very popular throughout, used every day.
SPAGHETTI	36x1lb.tin	Heinz	1.10.0.	J.S.	
SUGAR	49x2lb.pkts	Tate &Lyle	-	J.S.	Almost exact amount required.
SULTANAS	26lbs.	Australian Dried Fruit	-	J.S.	
SYRUP	6x1lb.tins	Tate & Lyle	-	NS by 3tins	

Food	Quantity	Make	Cost	Use	Comments
SWEETS	1x7lb.tin	Pascall	-	NS by 2tins	Popular, very useful "diplomatically" with villagers.
SALAD CREAM	2bottles			NS by 4bottles	
TEA	76x¼lb.pkts	Horniman	-	XS by 50pkts	Very little is required if coffee available.
VEGETABLES					
deh. onion deh. cabbage deh. mixed	4x12oz.tins 6x4oz.tins 6x12oz.tins	Springlow	-.9.9.	J.S.	Reconstituted very well
POM	85x½lb.tin	Chivers	3.17.0.	J.S.	Not very popular
veg.macedoine carrots	12x1¼lb.tin 24x1¼lb.tin	Chivers	-. 6.9. -.14.5.	NS by 12tins NS by 6tins	Very popular but very heavy.
peas beans	32x1¼lb.tin 36x1lb.tin	Maconochies	1.3.4. 1.14.8.	NS by 3tins J.S.	
veg.salad	39x15oz.tins	Heinz	3.9.4.	XS by 10tins	Not so popular after a while.
XMAS PUDDING	10x2lbs.	Chivers		NS by 4	Very popular
CHOCOLATE	40 bars	Nestlés		J.S.	Very useful on journies

1	Peanut Butter Fruit bars etc.	Mapleton	17.6.0.	4	Bovril Coffee Curry Lemonade Pepper Salad cream
2	Xmas Pudding Honey, Jam Marmalade Custard powder	Chivers	3.17.7.		3.17.5.
3	Chocolate Nespray milk	Nestles	16.5.3.		

TOTAL COST £148.12.0.

N.S. Not sufficient. J.S. Just sufficient. XS Excess. S. Sufficient.

SAMPLE MENUS

	BREAKFAST	SNACK LUNCH	
Day 1		2 sandwiches each of:	
	Sugar Puffs Scrambled egg + baked beans	Cheese Veg. salad	Biscuits Banana/fruit bar
2			
	Sugar Puffs Spaghetti	Bovril Peanut butter	Ovaltine biscuits Sultanas
3			
	Porridge Luncheon meat+baked beans	Cheese Jam	Cake Banana/fruit bar
4			
	Sugar Puffs Scrambled egg+luncheon meat	Luncheon-meat Peanut butter	Kendal Mint Cake Biscuits
5			
	Shredded Wheat Corned beef+baked beans	Bovril Veg.salad	Cake Sultanas
6			
	Sugar Puffs Scrambled egg+baked beans	Cheese Jam	Biscuits Banana/fruit bar
7			
	Porridge Spaghetti	Bovril Jam	Cake Biscuits

Every day - tea, ryvita, crispbread, marmalade, jam, honey and local fresh fruit.

SAMPLE MENUS

	BREAKFAST	SNACK LUNCH	
Day 1		2 sandwiches each of:	
	Sugar Puffs Scrambled egg + baked beans	Cheese Veg. salad	Biscuits Banana/fruit bar
2			
	Sugar Puffs Spaghetti	Bovril Peanut butter	Ovaltine biscuits Sultanas
3			
	Porridge Luncheon meat+baked beans	Cheese Jam	Cake Banana/fruit bar
4			
	Sugar Puffs Scrambled egg+luncheon meat	Luncheon-meat Peanut butter	Kendal Mint Cake Biscuits
5			
	Shredded Wheat Corned beef+baked beans	Bovril Veg.salad	Cake Sultanas
6			
	Sugar Puffs Scrambled egg+baked beans	Cheese Jam	Biscuits Banana/fruit bar
7			
	Porridge Spaghetti	Bovril Jam	Cake Biscuits

Every day - tea, ryvita, crispbread, marmalade, jam, honey and local fresh fruit.

SAMPLE MENUS cont'd.

	MAIN MEAL(a)		MAIN MEAL(b)
Day 1			
	Macaroni Cheese Peas, Carrots	Pancakes	Omelette Carrots, veg. macedoine	Rice Pudding
2				
	Corned beef hash Deh. cabbage	Tinned Fruit & Inst.Pudding	Fried luncheon meat Deh.onion, beans deh.cabbage.	Apricots & Inst.Pudding
3				
	Cheese omelette Peas, beans	Rice Pudding	Macaroni cheese Carrots, peas	Tinned or fresh fruit
4				
	Tinned fish Veg.salad, beans	Xmas Pudding, custard	Corned beef Beans, veg.salad.	Rice Pudding
5				
	Cheese Carrots, deh.mixed	Apricots & Inst.Pudding	Omelette Beans, peas	Xmas Pudding, & custard.
6				
	Curried lunch.meat Rice, deh.onion, macedoine	Rice Pudding	Tinned Fish Peas, carrots	Inst.Pudding
7				
	Omelette Deh.mixed, peas	Tinned fruit & custard	Corned beef hash Deh.mixed veg.	Apricots & inst.pudding

Every day - soup, and pom with main course. Coffee or tea afterwards, depending on the cooks.

SUPPER

Choice of coffee, ovaltine, horlicks - most people conservative and stuck to one drink most of the time.

Biscuits, occasionally cake.

JOURNEY HOME (3 days)

Ryvita, Cream Crakers, Margarine

Cheese, Marmite, Marmalade

Sultanas, Biscuits, Bars and Kendal Mint cake.

EQUIVALENTS

Unless otherwise stated, quantities are for a meal for 11 people.

Baked beans - 5 tins

Cheese - 2 tins

Cereals - Sugar Puffs - 1 pkt

Shredded Wheat - 1½pkts (12 per pkt)

Quaker Oats - ½pkt.

Egg powder - 1½ rounded tblesp./person

Fish - 2 tins, fresh fish - 1 kilo

Fruit - ½l . tins - 8 tins.

-fruit salad - 4 tins

Instant Pudding - 6pints

Meat - 2 tins/meal, 1 tin:20 sandwiches

Macaroni - 1 pkt.

Milk - 1½ tblesp:1pint, much less than direction on tin

Rice Pudding - 3 tins

EQUIVALENTS cont'd.

Soup - 4 pkts.

Spaghetti - 3 tins

Vegetables - pom - 2 tins

tinned veg-3 tins, less if deh.veg.used as well.

Xmas Pudding - 2.

10. FREIGHT REPORT

As a result of our policy to take a basic diet with us from Great Britain the freight amounted to thirty three pieces, totalling 85.5 cu.ft. and weighing approximately 1 ton 8cwts. A personal approach was made to shipping firms in the City, who offered quotations much lower than estimates obtained for alternative forms of transport. The only draw-back to this form of transport being the necessity to despatch the freight six weeks to one month before our arrival date and labour problems prevelant at London Docks at the critical time. W.F. Henry Van Dee Zee & Co NV agreed to take the freight on the outward journey to Piraeus but declined to return the stores and specimens as their ships only plyed around the Mediterranean in one direction, calling at various ports in Lebanon, Eygpt, Libya, etc. on the return journey to London. They kindly arranged however for our return freight, ten cases and two bales occuppying 30.0cu.ft. and weighing 525 Kilo to be shipped back by a similar company with cargo boats plying in the opposite direction - Westcott & Lawrence Line Ltd. Both these companies were very helpful and most generous at all times.

Packing was carried out in the College basement, and a complete list of the contents of each case was compiled. The majority of the cases were tea chests, supplemented with a few smaller boxed and a bale made up of tools

wrapped in sacks. Each item was banded with steel tape. weighed and the cubic capacity estimated. The contents list, weight and volume data was reproduced for shipping and customs formalities.

On 20th June the freight was collected and moved to the London Docks by a local carrier and shipped on board S.S."Henzee" bound for Piraeus. Full details of all the freight was supplied to the Greek Embassy at the same time to ease customs formalities at Piraeus. Arrangements were made to move the freight from Piraeus to Pharacla by lorry through an agent of F.Noel Baker Esq., a Mr. Gardikiotis.

When the advance party arrived at Pharacla no freight had arrived although the same should have been there for two days. The next day eleven pieces arrived all having been opened and some of the contents pilfered and destroyed. Representation was made to the British Embassy from whom it was learnt that the Piraeus customs had decided to "investigate" our freight and suspected that the food was for sale on the "black market". All this occured in spite of our contact with the Greek Embassy in London and the lodging of comprehensive papers. Due to the efforts of Mr. Noel Baker and his agent in Piraeus the remaining cases arrived two weeks later in a similar battered condition, one case being smothered in kaolin. Unfortunately the British Embassy was unable to help us with the

customs clearance which was eventually obtained "for a little consideration", or 1000Dr. This delay affected the planning of trips away from camp, increased the expenditure in food, and left a surplus at the end of the stay. Some food and equipment was carried by the person as this state of affairs was not entirely unforseen. On consideration there seems that little else could have been done with the exception of shipping the freight on from Piraeus to a smaller port such as Calchis or Limni where more personal contact with the customs may have reduced the duty and the delay.

Packing the equipment on the return journey was rather difficult as no banding was possible and the cases were considerably battered. The freight left Pharacla on 7th September in a lorry bound for Piraeus, but again ran into trouble with the customs, despite previous assurances from the Greek Embassy in London. The cases eventually arrived back in London late in October after having been taken aboard the TRENTINO on 26th September. No trouble was experienced at this end although a representative of the expedition went to the docks to clear the customs, as the delay there was causing specimens to decay.

Apart from customs difficulties the whole operation went smoothly with the help of the two shipping lines and Mr. Noel Baker.

11. MEDICAL REPORT

At the outset a list of medical supplies was drawn up to meet the following possible troubles:-

(i) General Food Poisoning

(ii) Accidents including burns, cuts and breaks.

(iii) Stings, Bites, Exposure etc.

The medical supplies listed below were thought to be adequate for this purpose.

Triangular Bandages. Large 51" x 36".		2
Medicated Wound Dressing. Large		6
" " " Small		6
Open Weave Bandage 3½" x 4 yds		6
" " " 1" x 3 yds		6
Lint, packet		1
Boracic Powder,	Tin	1
Talcum Powder,	"	3
Adhesive Tape	Roll	1
Elastoplast, 1½" x 1 yd		1
" Assorted pieces	Tin	1
" Waterproof pieces	Tin	1
Safety pins		
Crepe Bandage	Roll	1
Cotton Wool	Compressed Blocks	6
Burn Dressings, Large		3
" " Medium		3

Burnol	Tubes	3	
Sal Volatile	Small Bottle	1	
Tincture of Iodine Phials in plastic covers		3	
Enterovi form Tablets		100	
Sulphurtriad Tablets		500	Smallest packs
Thalazole Tablets		500	
Chloroquinine Phosphate Tablets		500	
Halazone Tablets		100	
Disprin	Bottle		
Cascara Segrada	Bottle	1	
Kaolin	Ounces	4	
Magnesium Trisil	"	4	
Marzine	Bottle(10)	1	Motion sickness
Avomine	Tins(10)	3	
Chlorodene	Small bottle	1	
Brulidene cream	Tube 1 oz.	2	
Mylol cream	Tubes	6	Insect repellent
"	Bottles	6	
Histofax	Tube	2	Sunburn
Soltan cream	Bottle	3	
"	Tube	3	
Optrex Eye Bath and Bottle		1	
Potassium permanganate crystals			
Syringe		1	
Snake Bite Serum, Cerastes	Ampules	1	
" " " Cobra	"	1	
" " " Echis	"	1	

Each member of the party was vaccinated against Smallpox and had injections to cover Typhoid, Paratyphoid and Tetanus These were carried out at [illegible] Hospital in April and May.

Malaria has recently been eradicated from Euboea by the Greek Government's programme of aereal spraying to kill mosquitoes and although the programme had lapsed in 1959 no mosquitoes were encountered.

Fortunately no serious accidents occurred; perhaps the most painful being the plight of Chris Ryan and Alan Spicer who were thrown together with the heavy saddle from the back of a mule into a spring thicket.

Although poisonous varieties of snakes were fairly common and scorpions were abundant in places there were no cases of serious bites or stings. Ants often in formidable numbers and mainly of the large type did however, bite when given a chance.

By far the most common trouble was a rather vague type of food poisoning and diarrhoea, which at one time or other affected almost everybody. Sources of infection included mice, vectors of a Salmonella type bacterial disease which probably caused most of the trouble. Entero-vioform tablets proved effective in every case but often left the patient very weak for two or three days. The villagers, who regularly suffered from this complaint used to take an overdose of Oozo (their equivalent to whisky) as a cure, but although this worked well with them even the most hardy members declined to follow suit.

Strangely enough the only other complaint was travel sickness which affected several members on the fourth day of the outward train journey and on the very overcrowded buses which ran two or three times a day over the fifty miles of unmade road between Chalchis and Strophilia. In both cases the heat and stuffiness probably caused most of the trouble but the psychological side may have entered into it especially when brown paper bags were handed out as one entered the bus. The local people were affected equally and used the universal Ouzo cure. Avanine tablets were very effective and the villagers who took them were equally fit.

The standard of hygiene and sanitary arrangements was low throughout the areas visited including Athens and several small passenger ships. As in many other parts of Europe facilities were few and poor and modesty hardly existed.

As was to have been expected the heat effected people in different ways. The direct effects, such as loss of energy, sleepyness, sunburn and mild forms of sunstroke caused little trouble after about ten days of acclimatization and no member of the expedition appeared to suffer any adverse effects. Indirect effects including "heat spots" troubled some members often remaining with them until the cooler weather commenced. The desire for water could effectively be reduced during acclimatization and after two weeks several members easily carried out normal duties in the sun without any water between breakfast and the evening meal Some members however, required considerable quantities everyday throughout the stay. Sufficient salts and vitamins were supplied

by the normal diet and no extra salt appeared to be needed.

More precautions and medical supplies were taken than were really necessary, which fortunately is usually the case with such enterprises.

Thames Rice Milling Co. Ltd.
Lipton & Co. Ltd.
A. Wander Ltd.

Marmite Ltd.
Keddie Ltd.

(b) At reduced prices:-

H.J. Heinz Co. Ltd.
Huntley & Palmer Ltd.
Van den Bergh & Jungens Ltd.
Carrs of Carlisle Ltd.
Crosse & Blackwell Ltd.
J. & J. Colman, Ltd.
The Nestle Co. Ltd.
Brown & Polson Ltd.
Maconochie Bros. Ltd.

Unicream Ltd.
Mapletons, Ltd.
Chivers & Sons Ltd.
G. Romney Ltd.
Wilts Ltd.
Kraft Foods Ltd.
Cadbury Bros. Ltd.
Ryvita Co. Ltd.
Oxo Ltd.

6. Equipment, Medical Supplies, Photographic Supplies.

(Free of charge and at reduced prices)

Prestige Ltd.
May & Baker Ltd.

Ilford Ltd.
Kodak Ltd.

SECTION II

FIELDWORK REPORT

II(A) BOTANY

INTRODUCTION

The Botanical objects of the expedition were all attempted and a useful degree of success obtained. The programme of work is set out below together with the section numbers covering the relevant topic.

1. The collection of dried specimens to be lodged in the Herbarium The Royal Botanic Garden, Kew, and with the College Botany Department.
2. A comparison of the mountain flora with that obtained by the Imperial College Norway Expedition, 1958.
3. To compile detailed descriptions of representative types of vegetation. 2, 3, 4, 5, 6.
4. The investigation and description of the various agricultural methods and economically useful plants.
5. The investigation of crop diseases present in the area.
6. To attempt an investigation into plant performance if a suitable species could be found.

The most difficult task was the identification of specimens. Unless some "on the spot" identification system is available, specimens are usually duplicated or inadvertently rejected as duplicates. With the exception of a few books, very little has been published on the area and very few specific botanical visits have been paid to Euboea. The bibliography illustrates our difficulty.

In an attempt to overcome this difficulty, members visited the Library at The Royal Botanic Garden, Kew, on several occasions prior to setting out and studied pictures of the Balkan species.

Although this enabled members to gain a useful knowledge of the flora likely to be encountered, species naming on that basis was most unreliable. Generally speaking it enabled one to place the plant in a family and usually a genera. Species identification was carried out by the Herbarium Department at Kew on our return.

Dr. K.H. Rechinger, Director of the Botany Department, Naturhistorisches Museum, Vienna, who has visited Euboea on four occasions studying the flora, invited us to visit him in Vienna on our way to Greece. Unfortunately with the funds at our disposal we were unable to take up this generous offer.

The programme was arranged so that botanists paired up and tackled different problems, with all contributing to the specimen collection. The aim was to cover as many communities as possible which with the exception of the very limited number of moist habitats was fairly widely achieved. Unfortunately suitable plants for performance study were difficult to select, but a short vegetative structure investigation was made with a species of Allysum.

A section on Agricultural methods and crops has been included to illustrate the type of agricultural communities existing in the area.

The most typical form of vegetation on the lowland and hill areas around the village and on the other near-by parts of the island surveyed, was pine forest with a well developed under layer of evergreen shrubs. The pines found in these forests were Pinus halapensis and P.pinea with the Aleppo pine being the dominant spp. and at higher altitudes the only pine present. In nearly every case these woods were tapped for resin by men who often travelled several miles from the nearest village to carry out their work.

A study was made of the shrub layer in these forests and it was found that the majority of the species were hard leaved evergreen shrubs and that the shrubs seemed to be definite in number and although the list differed slightly from area to area almost all the species could be found in any one locality.

The herb flora varied with the light intensity of the woods, being more abundant in the more open woods, but at this time of year was poor in numbers of plants in flower; the great majority having died back after flowering earlier in the year.

The domin nt or most frequent members of the herb and shrub flora differed greatly even over a short distance as can be seen from the following lists of plants collected from different localities within a mile or two of each other.

Flora of pine woods East of Pharacla 1) on an East Facing slope:-

Queveus coccifera (F), Q.cerris (R), Juniperus sp. R, Prunus spinosa R, Daphne gridium R, Smilax aspera R, Rubus sp.O, Hypericum empetrifolium, Pistacia lentiscus F, Phillyrea media F, Cistus incanus F, Poterium spinosa A, Cotinus coggygria O, Cercis siliquastrum A.

The symbols R,O,F,A and D were used to signify that the plants were either rare, occasional, frequent, abundant or dominant in the area.

The herb flora associated with the above shrubs consisted of:-

Teucrium polium A,

Delphinium peregrinum F, Scabiosa sp. F, Carolina corymbosa F, Brachypodium puinatum F, Bupleurum semidiaphanum F, Eryngium creticum O, Ceutaurium minus O, Thymus teucrioides, Echuim vulgave, Verbascum virgatum, Doucos carota Micromeria graeca,

though on the tops of the hills, forested with pine, the herb flora was much poorer in this area.

The following list of shrubs and herbs obtained from beneath pines in the same area as that above but on a slope facing West in the opposite direction demonstrates how the shrub layer differes in one locality:-

Arbutus unedo F, Calycotome villosus O, Colutea arborescens O, Hypercium empetrifolium O, Daphine

guidium O, Myrtus communis O,

Herbs:-

Asteriscus aquaticus O,

All these species were noted in addition to those noted above on the East facing slope.

On another, South-East facing slope, the shrubs found in the pinewood were:-

Arbutus unedo F, Phillyrea media F, Quercus coccifera F, Cercis siliquastrum F, Myrtus communis O, Smilax aspera O, Cistus uicanus O, Quercus cerris R, Colutea arborescens R Daphne guidium R,

and in this wood there were no herbs present.

The shrubs found in these pinewoods are those found in the well defined plant community, the macchie, which is a typical Mediterranean community. The macchie is not a climatic climax but occurs widely and often as the result of deforestation.

Two areas of deforestation were studied to see whether a change in flora between the forested and adjacent deforested areas could be detected. In both areas the pines had been felled recently (within 5 years?).

The first area was on higher ground, 2½ miles south of Pharacla.

The pines were very sparse and the shrubs included:

Myrtus communis F, Poterium spinosa F, Cistus iucanus D, Arbutus unedo O, Quercus coccifera O, Evicel

verticillata O, Erica arborea O, Juniperus sp. R, Cistus eveticus R, Cercis siliquastrum R, and Arbutus andrachne R.

In the adjacent land there were pine trees as they had all been felled, and fires had burnt down the vegetation leaving charred stumps of Arbutus, which did not seem to be regenerating. The plants found on this 'open heath' were:-

Cistus lucanus A, Myrtus communis F, Burnt Arbutus unedo F, Erica verticillata F, Poterium spinosa F, Calluna sp. F, Hypericum empetrifolium O, Quercus ilex O, Genista sp. O, Juniperus sp. R, Cistus creticus R, Cercis siliquastrum R, together with pine seedlings well established.

It can be seen from a comparison of these two lists that in the absence of the pines the Arbutus, Erica & Hypericum became more abundant, but the herb flora was poor in both communities, the conspicuous herbs being Teucrium polium and Anchusa sp.

The second area studied which included an area of deforestation was the Hog's Back (up to 1700') 2 miles West of Pharacla.

This was a jagged limestone ridge with pinewoods on the gentler slopes at its base. Part of these pine-woods had been felled and a comparison was made of the plants on the open land so formed with those in the

pinewoods adjacent.

The areas of pinewood at the same altitude level as the cleared area contained:-

Arbutus unedo A, Cistus incanus F, Hypericum empetrifolium F, Erica verticillata F, Myrtus communis F, Quercus coccifera F, Cistus creticus O, and Daphne gridium R.

The cleared pinewood area was characterized by such species as:-

Arbutus unedo D, Quercus coccifera A, Cistus incanus F, Cistus creticus F, Thymus teverioides F, Myrtus communis O, Poterium spinosa O, Genista sp. R, Hypericum empetrifoliu R, [illegible] corymbosa and Orchus sp. were present infrequently.

The Arbutus and Quercus coccifera in this cleared area increased in quantity relative to the amount found in the pinewoods but in comparing this cleared area with the other analysed it should be noted that the abundant species are different in the two areas, and that the species which are dominant or abundant in the cleared areas are those which were frequent in the unfelled pine wood previously existing on the site.

This variation of relative abundance of the shrubs in a locality is a typical characteristic of the macchie and it seems that there is a delicate balance

existing between species and that a slight change in environmental factors will upset the competitive balance in favour of certain species.

To continue the description of the limestone ridge. Above the pinewoods there was a shrub region on steep slopes, forming a well developed limestone pavement, with little soil between the much weathered rocks.

Here Quercus coccifera was abundant, and other species included:-

Arbutus and rachne F, Hypericum empetrifolium F, Cistus incanus F, Myrtus communis F, Cistus cleticus O, Quercus ilex O,

This community was similar to that on the cleared slopes below except that the prickly oak Q.coccifera was dominant on the steep rocky slopes.

On the uppermost slopes the flora was somewhat richer and the dominant species were:-

Quercus coccifera A Myrtus communis A, and Pistachia lentiseus O, Quercus ilex O, Arbutus andrachne O, Juniperus sp.O, and Hypericum empetrifolium O, were present with rare trees of Pinus halepensis. The herb flora was quite rich and contained several species found only in that locality:-

Stachys sp. F, Ceterach officinarum F, Pteridium aquilinum F, Sedum album F, Stachys ballota O, Carlina corymbosa O, Briza media O, Geranium purpureum O,

Asplenium sp. O, Thymus teucrioides O, Athamanta macedonica R, Scrophularia lucida ssp. filicifolia R.

The general appearance of the pine wood and the species present would indicate that, this area of the island at least, enjoys a rather less extreme climate than the mainland.

HEATH

The heath areas described consisted of all areas not covered by mature stands of pine, high mountain zones, fields and associated wayside places, but including felled or burned forest where regeneration had not modified the environment too severely.

Two lines of approach were taken. A qualitative description of characteristic heath areas was recorded and a more detailed study carried out in a selected area. This second area had been cut down and regeneration of a Pinus halapensis community appeared to be in process.

(a) Characteristic Heath Communities.

The dominant heath species were Erica arborea and Erica verticillate in the lowland areas which gave way to Pinus halapensis, young trees, and Cistus species in the higher zones. In a typical area dominated by heather the following species usually occurred:

Erica arborea	Cistus creticus
Erica verticillata	Cistus incanus
Helichrysum siculum	Helianthemum sp.
Teucrium polium	Arbutus unedo
Poterium spinosum	Cardiothymus capitatus

Pinus halapensis (young trees)

The plant cover rarely exceeded 80% at that time of the year; all monocotyledonous herbs having died back by July. The heather was usually dominant - abundant with Cistus and Helianthemum bushes usually much shorter and somewhat crowded. Pine seedlings were usually present and Arbutus unedo contributed to almost all heath areas but rarely exceeded three feet in height. Occasionally

occurring shrubs included Cercis siliquastrum and Pistacea lentiscus. The ground flora which usually included a few parched mosses, an isolated Carex species and occasional plants of Scabiosa crenata did produce very colourful pink Allium cupani and Cyclomen neopolitanum towards the end of August, possibly stimulated by the occasional heavy rain-storms which had begun to occur.

In the higher areas the average height of the heath stand was reduced from about four feet to nearer two feet, although the Pines present were frequently a little taller. Here the species were similar although Pinus halapensis, Cistus creticus, Helianthemum species and Poterium spinosum constituted the larger proportion of the plant cover. Vegetation only covered approximately 75% of the ground in these regions and although Erica species occurred frequently, they were no longer dominant in numbers or percentage cover. The species usually found in these areas were

Pinus halapensis	Erica arborea
Cistus creticus	Erica verticillata
Helianthemum sp.	Scabiosa crenata
Poterium spinosum	Carex sp.
Centaurea iberica	
Helichrysum siculum	

and occasionally

Quercus coccifera	Juniperus oxycedrus
Allium cupani	Antennaria sp.
Acanthus sp.	
Stachys germanica	

At the margins of the established Pine woods a fairly distinct change in vegetation was apparent. Smilax asper, Paliurus spina-christi, Pistacia terebinthus, Calycotome villosus and Cotinus coggigria were rarely far from the shade and a small umbellifer, Bupleurum semidaphanum, never occurred in the heath community but was frequently abundant in the pines.

From general observations it would appear that the heath community is a climax vegetation class in the lower areas but is likely to regenerate pine wood in the higher zones.

(b) Heath to Pine Woods?

The following more detailed observations were carried out at about 1,500 feet above sea level, distinctly above the lower heath but several hundred feet from the firwoods and the Quercus/Arbutus regions just below them.

Two hills formed by streams running eastward from the Kandhili Range were selected for further study. The more southerly of the two was smoothly rounded with a fairly uniform Cystus vegetation along the watershed with young Pines and some Erica distributed down the slope to the stream on the southern side. General observations indicated that the stream bordered by Nerium oleander and wet community species separated this hill from comparable hills. While Arbutus and Helichrysum individuals seemed to be randomly distributed Pinus species appeared to be regenerating in a wedge shaped area up the hillside, reaching almost half way from the stream to the watershed.

Overall percentage cover :

Cistus creticus	41%
Erica arborea	21%
Pinus halapensis	8%
No cover	20%
Other species, principally Helichrysum	< 1%

The other species were fewer in number than in the previous area. (Arbutus unedo, Helianthemum sp., Centaurea sp., Antennaria sp., Acanthus spinosus, Poterium spinosum, Smilax aspera, Teucrium sp., Helichrysum siculum.)

Vegetation patterns were mapped out. A remarkably constant ratio of percentage cover occupied by the three principal species emerged from these results. Pinus halapensis represented an 8% cover, a figure that would appear to be rather lower than a visual estimate. While no clear cut picture can be expected to occur from so few transects, it was noticeable that Pinus individuals occurred more frequently on the lower slopes. Younger trees formed a greater percentage of the trees on the higher slopes of the hill than of the lower stands.

A trend towards recolonisation of these hills by Pinus halapensis would seem to be indicated, but the small percentage of young individuals of any species suggests that any future change in the community balance will be slow.

4. FIR WOODS & MOUNTAIN FLORA - COMPARISON WITH NORWAY

Pine Woods and Open Heath extended some 3000 ft. up the sides of Oras de Kandhili. The pine woods often ended abruptly and an area of dead pines apparently felled and left, usually being recolonised by Pinus halapensis formed an intermediate band with the high Juniper Heath and Fir Woods above. The fir woods occured in areas, completely colonising the upper slopes and summit of Kandhili, but giving way to a relatively barren rocky area along the summits of other peaks in the range for about 500 ft. below both on East & West facing slopes.

The upper five-hundred feet and the summits of Kandhili and "K_2" illustrated the variety of mountain flora found at these altitudes, and is described below.

Fir Woods and Summits of Kandhili.

The various summits along the Oras de Kandhili varied considerably, those to the South being vivid white and treeless with a distinctly alkaline, dark soil sparsely distributed between limestone rocks. The range North consisted a larger proportion of soil and less of white limestone, although the rock still covered 80% of the surface. The soil in contrast was a deep red-brown with a very short intermediate zone

with the dark soil. No structural changes or strata difference was observed, the only apparent indication being the presence of a shallow col. The whole range had steep, sharp slopes falling Westwards into the sea, usually the whole 4000 ft. in about 100 yds. horizontal distance.

The tree layer consisted of almost pure stands of Abies cephalonica from the col to the summit of Kandhili with little shrub layer present. The few shrubs present, principally Quercus ilex, were usually sparse and separated by the dense stand of fir. Under the carpet of needles few herbs were observed although a white foxglove (Digitatis ferruginea) and a species of Helibraine, past flowering, formed isolated patches. Where trees had fallen lianes (Smil[illegible] aspera and Clematis flammula) covered the light facing trees and very often thirty species of herb colonised the ground. Most noticeable of these were Scabiosa crenata, Viola sp. Fragaria sp. Polygala calcarea, Geranium purpureum and Hypericum empetrifolium.

Outcrops of rock occurred and became more frequent towards the summit. These were usually floraless with the exception of several small ferns, Asplenium marinam, a short form of Dryopteris villarsii and a Mint, Mentha microphylla which although in partial shade and exposed to the sun were able to conserve water. An identical

flora was found in storm gullies high up on the slopes of [illegible].

Two plants were surprisingly absent. Pinus species were never found associated with the fir and Bupleurum semidiaphanum so common under the shade of the pines also fails to appear.

The partially open summit of Kandhili supported a very varied flora many species of which occur at sea level in the higher latitudes. Probably the most striking plants seen on the summit were patches of stinging nettles (Urtica dioica) and Ragwort (Senecia euboeus). But a range of common English types was also scattered over the forty yard radius boulder strewn summit; among them, Bracken (Pteridium aquilinum), Arum lily (Arum sp.), Forget-me-not(Myosotis sp.), Privet (Lornicia sp.) with Mistletoe (Vicum album) in the fir trees. Several grasses (Bromus Sterilis and Aira caryophylea) and docks also occured.

Several mosses and lichens covered parts of the trees and ground on the upper slopes including Ctenidium molluscum, Bryum capillare, Everinia sp. and Tsillandsia sp. However, no serious attempt was made to collect these groups as the range of habitats was very limited and insufficient literature had been available.

A list of plants from the higher regions follows .

As will be mentioned elsewhere, the irregular and surprising appearance on the island of Pteridium aquilinus, a strict calcifuge especially amongst outcrops of limestone was difficult to explain.

Slopes and Summit of "K_2".

Approximately five hundred feet below the summit of "K_2" a hard band of limestone held back a flat plateau of softer limestone. Normal erosion valleys continued down to the pine woods and a treeless upper slope with red/brown soil ran up to the summit from this plateau, which itself sloped gently North before converging into a narrow steep sided gorge running to the sea and floating the last thousand feet over an almost sheer wall. The community structure was based on Heath (Erica verticillata) two oaks (Quercus coccifera) three species of Juniper (Juniperus spp.) and two species of Arbutus (Arbutus unedo). Occasional pines (P.halapensis) occured and this constituted their altitude limit at this latitude. Several Ash trees (Fraximas sp.) were scattered around mostly reduced to the general height of the vegetation, about eight feet for the trees and two to three feet for the shrubs. The majority of the ground flora was monocotyledonous herbs dying back early in the year to leave large bare patches. Several Helianthemum species, Cistus species and Hypericum species were in

flower. Clumps of Carex species were rare. As the gorge narrowed more trees appeared in the protected gullies, and interesting species included Acer creticum, Calamintha sp. Cornus sp. Teucrium flavum, Ceterach officinalis, and Laurus nobilis.

Much of the exposed, hot, East facing slope of K_2 contained monocylecons and a very attractive pink lily (Allium cupani), about four inches high was in flower. Specimens of the same species were also recorded frequently in pine woods at sea level. As with the summit of Kandhili temperate species were also recorded but these were entirely different from those recorded on the higher summit, and included Flax (Linum cathartium) several saxifrages, a form of Asplenium trichomones and a few caryophylaceae, especially Dianthus tenuiflorus.

The exceedingly steep scarp was not studied, but a similar habitat, the "Hog's Back", although 1500ft. above sea level, gave an intermediate type of flora.

The "Hog's Back", named after its very striking ridge, was exceedingly steep on three sides but the pine woods reached far up the Western slope from a saddle. The same strange band of dead pines separated the summit from the Strawberry trees (Arbutus spp.) flanking the pine woods. The rather flat and

extensive summit consisted of a limestone Pavement in an advanced stage of formation with large jointed gullies supporting Oak, (Quercus coccifera), Q.ilex, Arbutus sp. and Juniper (Juniperus sp.) which gave the appearance of a prickly bed. Both fir and pine species were absent but small patches of less developed pavement formed suitable habitats, several herbaceous including Stachys germanica, Teucrium flavum and Calamintha sp. Two ferns, Asplenium trichomanes and Coterach officinarum occupied many of the crevices, and Geranium purpureum was locally frequent. Small areas with grass, (Brisa Major) and surrounded by Stone crop (Sedum album) occured on the small areas of rock debris present together with a strange smelling Umbellifer.

When these three summits described are considered, the variation in the habitat and species present is surprisingly great.It is unlikely that climatic conditions could vary to such an extent as to explain the results. The absence of pine and fir trees from the summit of the "Hog's Back" could be attributed to lack of depth for rooting, and the extreme competition from oaks for the pavement gullies. This is certainly not true of K_2 which apart from having a redder soil apparently does not differ from Kandhili. The distribution of other species can in part be attributed to

the resulting shade factor for in the absence of trees, the herbs are exposed not only to intense heat, and cold, but also to the eroding agents, especially rain and wind. The fact that goats were observed grazing on K_2 is probably of major significance. Comparative species lists, and other data, given below indicate the extent of the variation.

	Kandhili	K_2	Hog's Back
Altitude	4200	3800-4000	1500ft. ASL
Rock	Limestone	Limestone	Limestone
Soil	Dark Brown	Red-Very Dark Brown	Dark brown
pH	7.8	8.4 7.8	7.8

Species

Kandhili	"K_2"	Hog's Back
	Plantago sp.	Stachys germanica
	Teucrium sp.	Myrtus communis
Senecio nebrodensis	Stachys germinica	Quercus coccifera
Urtica dioica	Festuca orina	Arbutus sp.
Geranium purpureum	Juniperus sp.	Pistacia lentiscus
Myosotis sp.	Quercus coccifera (very small)	Ceterach officinarum
Abies cephalonica	Linum catharticum	Stachys germinica

Kandhili	"K_2"	Hog's Back
Vicum album	Sedum album	Pinus halapensis
Bromus sterilis	Minuartin verna	Thymus teucriodes
Bromus sp.	Minuartia wettsteinii	Asplenium sp.
Aria caryophylea	Dianthus tenuifolius	Senecio nebrodensis
Poterium sanguisorba	Tunica cretica	Sedum album
Rumex sp.	Buffonia stricta	Teucrium polium
Ceterach sp.		
Pteridium aquilinum		
Carduus sp.		
Cteridium molluscum		
Crepis neglecta		
Scabiosa crenata		
Lornicera caprifolium		
Amaracus pulchur		
Percentage of ground without plant cover		
40	70	30

Similar latitudes studied in Norway, 20° latitude to the North were very different as the following species list will indicate:

Juncus trifidus	Mosses
Carex biglowii	Lichens
Viscaria alpina	

Deschampsia alpina

Poa alpina

Erophorum sp.

Phylodoce caerulea

Cassiope hypnoides

Percentage of ground without plant cover 95

Percentage of ground with permenant snow cover 80

Lichens which colonised much of the exposed rock accounted for more than 90 percent of the plant cover at these altitudes.

When compared with Norway the Greek habitats, although at a similar altitude, supported different communities. Although any close comparison would be erroneous, the summits described have some factors in common with limestone pavement areas in Britain, where plants also tend to colonise the soil between the limestone blocks for shelter and rooting. In both cases many of the types of tree represented are stunted and occupy protected gullies. Abies cephalonica was the only tree observed in Greece able to colonise the higher mountain slopes and summits successfully.

In fact the altitude effect was completely masked by the climatic conditions prevailing in the two areas, with the habitats in Euboea supporting many of the species characteristic of Karstic scenery.

5. WAYSIDE FLORA

Wayside habitats included such areas as stubble fields prior to ploughing, banks, road sides and patches of uncultivated scrub which could not conveniently be described in pine wood or heath vegetation.

Stubble fields contained weeds which had grown with the crop such as Kichxia spuria, Echinops micros phalus Euphorbia aleppica and dense grass swards of Cynodon dactylon and had been too short at the time of harvesting, and more rapidly developing seedlings. Among the most common of the latter was Heliotropeum europeum with its second spike of white flowers and grey green leaves which gave the fields a distinct hue just prior to ploughing. This was a common sight.

Many of the waste patches around the village were densely covered with Scolymus hispanicus, Centaurea solstitialis and Centaurea iberica which after a while ceased to penetrate the skin. Ballota nigra often completely covered high nitrogen areas and Xanthium spinosum the more moist habitats.

A rather attractive unmanaged shrub Vitex Agnus-castus flanked many pathways with spikes of pale purple flowers which contrasted with the bright yellow Mullian (Verbascum intermedium) and Cistus incanus. Many of the banks supported grasses, Bromus scoparius, Brachypodin

pinnatum, Eragrostis cilianensis with such striking species as Dracunculus sp. Echium plantagineum and Reseda lutea.

Probably the most common species present as wayside plants were Tribulus terrestris and Poterium spinosum but the large number collected, identified and set out in the plant list indicated the variety to be seen at that rather poor time of the year.

During the summer months little natural water occured in the surface and hence communities of aquatic and semi-aquatic species were rare. Several different types of watercourse were present however, and four were selected for study:

1. a mountain stream running down from the Khandili range,
2. a river running south from Strofilia, which showed considerable variation in width and water content,
3. a wide river bed holding little water near Pharakla,
4. a similar river to (3) near Achmetaga, about twelve miles away. The species of plants found in the water, at the waterside, on the banks and on the dry river bed were collected, identified, and suitable specimens pressed to bring back to England. Where possible, collections were also made of the fruits and seeds. The habit of the plants, their habitat and its relation to their habit, and their frequency of occurrence were noted. Line transects were made I-V to give a general impression of the width of the rivers and the plant coverage.

One very important factor governing the river vegetation was the irregularity of water supply to most of the water channels on the island. The higher streams were the only water-ways observed to be continually full of water which drained down from the mountains. These gradually petered out in the plains, and ran gently along small channels which were part of much wider dry river beds,

often forty to sixty yards wide. After a cloudburst one evening, which lasted for about an hour, the rivers near Achmet, ga and Pharacla were found to contain much more water than usual. These ran for several days, leaving a layer of mud three to four inches thick before almost completely drying out.

Considerable snow falls in the winter, and on melting, all the rivers, even the widest, are filled to capacity for a considerable time. Foot bridges consisting of suspended between trees with a rough wooden slatting were found suspendedacross the wider rivers and evidence of the flood height was found with debris lodged five and six feet above the bank. Once the melted snow has drained away, most of the rivers remain completely dry for the summer and are colonised by annuals capable of rapid growth under dry hot conditions.

Two main river types were distinguished:

a) mountain rivers eg.(1)- water continually flowing

b) plain rivers eg. (2)-(4)- infrequent water coverage.

These will be considered in more botanical detail.

1. Mountain Streams

The stream studied which arose as springs at the souce of numerous tributaries, flowed swiftly over large boulders or shallow beds of gravel, and due to its speed very few plants were found in the water or immediately at the water's edge. Abundant fruiting Chara was found in still pools, and

thick permanent clumps of Schoenus nigricans were found abundantly at the water's edge. The tips of all the shoots were found to be grazed, probably by goats. Plants found in the damp gravel beside the water included

Agrostis semi verticilata

Isolepis cernua

Adiantum-Capillaris veneris

Maidenhair fern - very abundant in damp shady places under overhanging rocks.

Veronica fruticans

Teucruim scordium

Lythrum hyssopifolia

Mentha aquatica

Samolus valerandi

Blackstonia perfoliata

Anagallis arvensis

Species of Viola, Sedum, and Thymus.

2. Plain Rivers

These were found to vary in width from two to sixty yards, and could be easily recognised by the plane tree, Planatus orientalis, found frequently along the banks. The river bed was mainly fine gravel or small pepples. Patches of mud quickly dried and cracked where exposed to the sun. Plants found included the following:

a) In running water - Cladophora sp.

Spirogyra - two sp.

Fontinalis

b) At waters edge - large permanent clumps, often three to four feet in diameter and five to six feet high debris being collected between the stems to a height of one to two feet.

Cyperus major

Juncus acutus

Juncus inflexus

Juncus glaucus

c) In stagnant pools and also colonising sand and silt. Usually by means of an extensive system of rhizomes up to 4 feet long, spreading through the shallow water and rooting at the nodes. Where conditions were favourable dense rafts of floating vegetation were formed

Agrostis semi-verticillata

Mentha aquatica

Astericus aquaticus

Alisma sp.

All these plants were found abundantly by the water, and gave the river a characteristic appearance.

d) Plants found near water in shade and damp conditions-

Marchantia	Juncus articulatus
Lunularia	Lythrum salicaria
Samolus valerandi	Cyperus longus

Equisetum fluviatile and other spp.

Selaginella sp.

e) Other plants also near water -

Blackstonia perfoliat[illegible]
Calaminthe ascendens
Rubus fruticosa
Anagallis arvensis
Spp.of Plantago
Nasturtium
Veronica
Trifolium
Fragiferum
Teucrium
Cirsium
Sparganum ramosum
Carex panicea
Carex pendula

Centaurium sp.

Shrubs & trees-

Nerium oleandum
Vitex Agnus-castus
Crataegus sp.
Tamari anglica
Gallium mollugo

f) Plants on river banks where conditions were drier.

Substrate finer - silt or sand -

Tencrium scorodonia
Equisetum arvense
Spp. of Senecio
Sonchus
Deschampsia
Rumex
Lycospersicum

g) Plants found associated with river banks. and often interspersed with group (e) but also typical of wayside open habitats-

Centaurium minus

Anagallis arvensis

Picris spinosa

Delphinium junceum

Lathyrus pratensis

Poterium sanguisorba

Prunella vulgaris

Pallenis spinosa

Clematis vitalba

Echinoclea crus-galli

Spp.of Scabiosa, Pteridium.

Castanea Sativa

1) Plants found on wide dry river beds. These were mainly herbs, found in isolated patches on sand and gravel poor in nutrients. Tap roots were found to be very long, and many plants were joined by tough rhizome systems barely hidden under the surface -

Kicksia spuria

Samolus valerandi

Scolymus hispanicus

Verbascum undulatum

Trifolium campestre

Ononis spinosa

Veronica scutellata

Medicago minima

Lotus campestre

Echium plantagineum

Lotus angustissimus

Centaurea soltitialis

Daucus carota

Spartium junceum

Seedlings of Platanus orientalis(male & female)

Ephedra campylopoda

Chamaenerium sp.

Myosotis sp.

Scrophularia lucida

Centaurium minus

Hypercium perforatum
Dianthus armeria
Anagallis spinosa
Poterium sanguisob
Prunella vulgaris

Five transects were studied across various areas of the river beds. In the upper reaches where the stream gullies were exceedingly shallow and narrow with very little water, the vegetation of the surrounding type usually persisted to the water's edge. It was not until the stream had widened to form a definite bed that any other species became apparent. The first transect was taken where the river was about forty feet wide at bank top, which in most cases was well down into the plain areas. All above this point is described under the Mountain Stream paragraph.

The transects are illustrated [illegible] the corresponding type of river bed material is shown on the same diagram.

Transect I. This diagram illustrates the paucity of vegetation especially in the water and also the fact that the complete shade afforded by the Plane trees hinders colonisation of the river bank. As mentioned elsewhere in this report, goats grazed almost all vegetation and the effects are even shown by this transect.

II. Much the same effects are apparent here, especially the shade effect, but the general

quantity of water is less. Actual colonisation of the water was rare.

In both the previous transects the water was usually just moving. Except in time of rain the water gradually evaporated or drained into the ground. The following three transects illustrate dry river beds and show the tenacity with which certain plants are able to exist in usually parched conditions; but also under feet of water and in a strong current during flood seasons.

III. A larger number of species begin to occur as the river bed becomes wider due to the greater stability and more even conditions. The plants towards the banks of this region are not affected by moderate rainfall. An interesting point is the presence of both Braken (Pteridium sp.) and Wayside Buglass (Echium sp.) close together. In the predominantly alkaline soil it was most unusual to find Braken.

IV & V. These transects, which cover increasingly large stretches of dry river bed show the decreasing effect of the water. With the reduction in the effect of the water Equisetum species tend to disappear and relatively rapidly germinating seedlings..

become more prominent e.g.Plane seedlings.

When the extreme conditions are borne in mind it was hardly surprising that the river bed was very sparsely covered and in many respects resembled a desert. Except in very damp areas competition for space was non-existent and the normal primary, secondary colonising species groupings appear to be absent. By far the most important factor is the ability of the particular plant to rapidly germinate, root and establish itself before extreme conditions of draught and flood effect the habitat. On the dry river bed two of the most successful perennials were Ephedra sp. and Cistus sp. with Juncus sp. successful along the margins.

The areas studied during the months of our stay indicated that water dependent vegetation can easily establish itself close to permanent water. Had the same area been studied in May undoubtedly more species would have been associated with the damper habitats. However, even during the most favourable period this type of vegetation formed only a small part of the general picture and was by no means characteristic of the island.

7. ECONOMIC BOTANY

Many of the crops grown were used by the villagers themselves although the products derived from the local pine forests were usually transported to other regions.

TIMBER PRODUCTS

Much of the island was covered by pine forest, which provided employment for a large number of men and also a considerable fire hazard. The two predominant species were the Allepo Pine (Pinus halapensis) and the Stone Pine (Pinus pinea) both of which were used 1)Resin Tapping
2)Timber
3)Charcoal.

1)Resin Tapping

Basal incisions were made in the trunk about a foot above ground level and a strip of bark and wood cut to form a vertical channel. A metal cup was nailed into the basal incision and the resin allowed to bleed into the cups. A tree might have three cups with vertical channels rising above them for one to ten feet depending on the age and the size of the tree. About every three weeks the cups were emptied into drums and a fresh extension cut from the strip. The drums resembling large panier baskets were tied, one either side to a mule. The resin tapper would climb on top, and set off for the village. A large concrete resin pit in the village was filled with this crude form of resin, each panier being weighed before

being emptied. Gradually the pit, about ten feet deep was filled up and the liquid separated from the sticky sediment. At intervals the pit was emptied into large drums by hand and transported by lorry to a local refinery. A small refinery at Limni removed wood chips, pine needles, etc., and ran the resulting viscous liquid into wooden casks or steel drums, which were exported by sea. Turpentines (oleoresins) were obtained from the crude resin, which were re-distilled to give the essential oil spirits of turpentine and resin. The crude resin formed the most important export of the island but a small percentage (1%) was used in the preparation of the local greek wine - Retzina.

2) Timber

The pine was also used as a source of timber, much of which was used as fuel. Two other trees were tended for the timber they provide, the plane (Platanus orientalis) and the oak (Quercus cerris and Q.robur). The plane was fairly abundant in the river valleys and some of the wood was used locally, the remainder being sent to Athens by timber lorry. Much of the local construction was based on poles stripped of bark and sometimes squared off with an adze but ceiling slats and furniture were made from local timber sawn on the spot. Oak was scarce, and large trees seen in Britain were absent. As a result all the oak was taken into Athens where a better price could be

obtained. Walnut (Juglans regia) was only occasionally present and was cultivated principally for its fruit, the timber qualities being unused.

iii) Charcoal

All the cooking in the island was carried out in "bee-hive" charcoal ovens or over charcoal open fires. Large charcoal burning kilns were built in late summer entirely of wood and allowed to burn slowly without any covering of soil. The draught was controlled only by the very accurate way each piece of timber was cut and the finished kiln looked rather like an inverted basket. When the fire had reached the outer skin and flames began to appear the kiln was pulled apart rapidly so that the central core of charcoal was prevented from burning out. Both pine and plane were used as raw material, but in each case only lopped side branches or off cuts were rendered down.

FOOD CROPS

Two major food crops were grown, maize and soya bean, and these supplemented with fish and occasionally goats' meat formed the staple diet of the villagers. The maize was a rich source of carbohydrate and the soya beans contained more protein than any other vegetable crop; both also contained fats, vitamins and certain essential minerals, and so were ideally suited to be the basis of any diet.

Maize - Zea Mays.

A variety of flint maize was sown in the early spring and by August had grown to an average height of five feet. In the l tter part of the month, the crop was harvested, the cobs (sometimes two on a plant) being cut by hand. They were loaded onto mules and taken to the village where they were hand shucked and spread out to dry in the sun for about twenty-four hours. The seed was then threshed from the cobs with an old fashioned mechanical thresher which visited all the villages in the locality, and laid on large sheets to dry, being turned regularly so that the whole crop was exposed. The majority of the crop was stored for winter use; the seed for flour and bread and the foliage as fodder for livestock.

Soya Beans - Glycine maxima

The seed was spring-sown and the pods left on the plant until September when they were fully ripe. The whole plants were uprooted, loaded into oxen carts or onto the backs of mules and taken to the village where they were either hand shucked or threshed with the aid of animals. Two or three horses or mules with hooves padded were blindfolded, harnessed side by side and tethered to a pole. The dry plants were liberally scattered around the pole and the animals were made to walk round. After a time the animals would be untethered, the foliage raked off

and the white beans winnowed from the remaining debris. Whereas the foliage was stored in barns for winter cattle feed, the beans were shovelled up, sieved from the loose earth and stored in concrete floored sheds.

A small proportion of the crop was harvested green, and the young pods cooked whole as a green vegetable.

OTHER FIELD CROPS

Cotton - Gossypiumhirsutum - Upland Cotton

The northern limit of economic growth of this crop is normally considered to be 37°N Euboea lies between latitudes 38' and 39'N and cotton was not extensively grown. The type used was a variety of Upland Cotton - Gossypiumhirsutum. A major difficulty was to supply the crop with sufficient water during the growing and fruiting season. Although very tolerant of the poor soil conditions which existed, the cotton never really flourished. Ginning and baling was carried out locally and the cotton transported to the mainland for export.

Broomcorn - Sorgham vulgare technicum

Broomcorn was a rapidly growing annual often reaching ten feet in height and having a loose, much branched panicle type of inflorescence. It is particularly drought resistant, and therefore well suited to the prevailing dry conditions of the summer months. The

panicle of branches, often two feet in length was used to make simple brooms and brushes, whereas the remainder of the crop was used as stock feed. Sorghum brooms were in fact the only brooms known to county districts in Greece and Yugoslavia.

Sesame - Sesamum indicum

This annual herb was cultivated for its semi-drying oil; the seeds containing about 50% oil, which was extracted by cold pressure and used for cooking, incorporation into cattle-food and also exported to France.

Certain other crops were grown to a limited extent and most of these were for local village consumption as a supplement to the normal diet.

Sunflower - Helianthus annus

These plants grew to six to eight feet, producing large flowers often more than twelve inches in diameter. The seeds, which were black, were the useful part and these were either crushed to produce oil or used as poultry feed in the winter. They suffered very badly with fungus diseases and often more than 50% of the field was devastated.

Okra - Hibicus esculentus

Though a native of tropical Africa, this plant has

been grown in Southern Europe for centuries. The plant, which was a short, stout stemmed annual produced seed pods three to six inches long which were used as a green vegetable and known locally as "Ladies Fingers"

Tomatoes - Lycopersicum sp.

Almost all the villagers grew their own few rows of tomatoes, the large segmented type, most of which were affected by Verticillium Wilt. The fruit was eaten as it became ripe and some was split open and the seeds dried for the next season.

Among the other crops grown occasionally were Aubergines, Peppers, and Marrows. These were also eaten when ripe as a fresh vegetable, no means of storing being known.

FRUITS

Grapes - Vitis vinifera

All the vines in this region were cut back to bush form for ease of picking as in most areas where grapes were grown and plantations were usually on the hillsides due to their requirements for a well drained soil. Most of the plantations were infected with both insect and fungus pests, and although aerial spraying with copper sulphate was practised this was not at sufficiently

frequent intervals to prevent diseases taking a hold. Nothing was apparently done to combat insect pests. So far the area has escaped Phyloxora.

Varieties of black and white grapes were grown indiscriminately in mixed plantations, the latter being used in the preparation of Retzina, the Greek National Wine and for eating. Black grapes were used for making red wine of the Mavrodaphne type.

Apples and Pears - Pyrus sp.

Isolated trees were found edging paths and around dwellings, probably as much for the shade they afforded as the fruit borne. There were no orchards in the accepted sense of the word, but apple and pear trees often occured with other fruit trees in what might be termed a mixed orchard. The quality of the fruit was poor, much of the crop was infected and in no way could it be suggested that the trees were systematically cropped.

Figs - Ficus carica - Smyrna Fig.

These trees occurr almostly singly, around dwellings, or dotted through vineyards, the fruits being eaten fresh when ripe. In other regions the figs were dried and exported, principally to the U.S.A.

Occasionally a few fig trees were found in isolated and unlikely places but almost always the foundations or

ruins of now dead villages and dwellings were to be found close by.

Water Melon - Citrallus vulgaris

This annual crop was extensively grown, ripening from July onwards. The fruits were allowed to develop on the soil surface, no "resting" material being provided. Most of the water-melons were grown for local consumption but a few were carried to other villages for sale. The outer skin varied in colour from white to dark green with a pith like interior of reddish pulp enclosing black or white seeds.

Peach - Prunus persica

The peach and quince (Cydonia oblonga) occured dotted through vineyards, cornfields and olive groves, the fruits being used solely by the growers. The trees were between fifteen and twenty feet in height.

Extensive peach groves were seen on the mainland where these constituted an important export crop.

Olive - Olea europaea

These rather silvery green evergreen trees varied in height between about twelve and forty feet. They were cultivated in groves, along retaining walls and beside roads and very few areas of the habitated localities lacked substantial numbers. Olive oil, a preserving,

cooking and edible oil was widely used and is usually the only oil available; Butter, hard and other animal fats being completely absent in most places. Olive trees take seven years to mature before the small green fruits appear. These were either eaten raw or crushed to provide oil and few were left to ripen to the dark colour obtained in late September and early October.

Agricultural Methods and Implements

Agricultural methods and implements tended to be primitive throughout, although in certain circumstances one could see the old and the new working side by side, e.g. modern tractors alongside horse-drawn ploughs. The latter will, I think, be used for many years to come, if only on account of the inaccessibility of some of the land used for crops.

Two of the greatest problems facing the villagers were

i) water-supply, and

ii) diseased crops.

There is considerable rainfall during the winter months, but very little during the summer, and most of the water needed for the crops was pumped from Artesian wells using petrol pumps or horse and wheel methods and fed into metal irrigation tubes lying on the soil surface, leading to channels cut into the soil to guide the water. Children often used to tend this irrigation system.

Mulching might possibly have helped to conserve water, but there were no mulched crops in evidence.

Very little systematic attack was made on fungal and insect pests which reduced both quantity and quality of crop very considerably. It would appear that regular

treatment with fungicides and insecticides is required.

Much time and labour could have been saved by the introduction of modern threshing and harvesting machines, and the use of powered vehicles for transporting the produce, although the latter entails considerable road construction first.

Conclusions

Many of the diseases were carried from generation to generation owing to the universal habit of saving seed from one year to the next. This problem could only be solved by wholesale distribution of sterilised seed and the burning of infected plants. *

New crops have been introduced from time to time, and the most recent of these was the potato, which cropped fairly well, but was not much liked by the people, who in consequence were not keen to grow them.

To sum up, the improvements in method and machinery required would necessitate the expenditure of vast sums of money, and the outcome would by no means be definitely financially profitable, whereas the present system keeps all employed and at a low but reasonable standard of living.

* The constant inbreeding has resulted in poor strains (e.g. two corn cobs from each maize plant would seem a good yield whereas this falls short of the Middle West

Yield in the U.S.A. which often approaches fifteen cobs per plant) and a plant breeding scheme with respect to maize, olives, peaches, grapes and many other crops is needed. At present there are only two Agricultural Research and Training Centres in Greece, a state that cannot be solved until the economic structure of Greece is strengthened.

8. SURVEY OF PLANT DISEASES

The fungi which were found on Euboea were nearly all parasitic. As one might have expected in view of the hot dry weather conditions, rusts and smuts and a few mildews were the most commonly found types. Only two Agarics were found, and these were growing in the forest at a fairly high altitude, where the rest of the flora was different from that seen in most of the area and more closely resembled that found in a temperate climate.

Many of the crop plants were diseased and almost 100% infection was frequent. Nearly every tomato plant found was showing symptoms of Verticillium wilt disease, although the plants were still large compared with the ones grown in England and appeared to be cropping quite well. Many of the runner beans showed the brown leaf spots, caused by the rust, Uromyces phaseolus, and the vines had nearly all been attacked by the mildew Plasmopara viticola. One of the most spectacular diseases was that caused by the smut Ustilago zeae on the stems of maize plants, where it produced huge black fruiting bodies as much as six inches long and three to four inches across, packed with tens of thousands of spores.

Amongst the trees, Quercus ilex and Platanus occidentalis were most commonly found to be diseased; the former suffering from a leaf mildew disease caused by a species of Phyllactinia and the latter showing black leaf spots caused by Stigmina platani. No fungi were observed on any

of the olive trees.

In contrast to the cultivated plants, the wild species appeared to be remarkedly disease free. This might have been because many of the wild plants were very dried up by the time we arrived, whereas the cultivated ones were still quite lush and green due to irrigation. Perhaps a more probable explanation is that they were usually grown in solid stands of one species whereas the wild plants were usually dispersed among other species and therefore a more effective spore dispersal mechanism would be required to secure the same degree of infection. The latter hypothesis is supported to some extent by the fact that certain species of wild plant which tended to be locally abundant in distribution, especially perennials, tended to be heavily infected with one particular disease. Examples of this were Malva sylvestris which was nearly always infected with Puccinia malvacearum and Rubus fruticosus which was frequently infected by Phragmidium violacearum. It is perhaps of interest that these two pathogens are common in the British Isles.

Two members of the party visited the Athens University Plant Pathology Department for a day, during which time they were introduced to the range of fungi commonly occurring in Greece and to some of the problems being tackled. Probably the most noticeable

between the department and those in Great Britain was the general lack of facilities and equipment available. It would appear that although the standards were quite high too few people were available for the tasks in hand. An accompanied tour of a citrus farm on one of the Aegean Islands, kindly arranged for us by the department, unfortunately had to be cancelled.

A collection of diseased plant material was made and the Plant Pathology Department of Athens University gave us some of their surplus herbarium specimens.

In the fungi list which follows only specimens which have been identified without doubt have been included whereas many others of less definite taxonomic position have been omitted.

List of Parasites and Their Hosts.

Higher Plant Parasites

Orobanche crenata	Vicia faba
" sp.	Lens esculentum
" muteli	

Fungal Parasites

PHYCOMYCETES

Peronospora parasitica	Sisymbrium sp.
" trifoliarum	Melilotus officinalis
" polygoni	Polygonum aviculare
Plasmopara viticola	Vitis vinifera

Albugo candida	Capsella bursa-pastoris
" tragopogi	Tragopogon porrifolius
Bremia lactucae	Lactuca sativa
ASCOMYCETES	
Taphrina deformans	Prunus persicae
" pruni	Prunus sp.
Sphaerotheca pannosa	Rosa sp.
Uncinula necator	Vitis vinifera
Phyllactinia suffulta	Quercus ilex
Erisyphe communis	Convolvulus sp.
" pisi	Vicia sativa
" umbelliferarum	
" cichoracearum	
" graminis	Gramineae
Polystigma ochraceum	Prunus amygdalis
BASIDIOMYCETES	
Ustilago cynodontis	Cynodon dactylon
" bromivora	Bromus sp.
" tritici	Triticum aestivum
" avenae	Avena sativa
" nuda	Hordeum sp.
" zeae	Zea mays
Tilletia laevis	Triticum sp.
Urocystis cepulae	Allium sp.
Uromyces appendiculatus	Phaseolus species cultae
" striatus	Medicago sp.

Uromyces behenis	Silene sp.
Puccinia phlei pratensis	Phleum pratense
" dispersa	Secale cereale
" graminis hordei	Hordeum hexastichon
" " tritici	Triticum sp.
" "	Secale cereale
" coronata	Avena sativa
Gymnosporangium sabinae	Pyrus communis
Melampsora helioscopiae	Euphorbia helioscopia
" lini	Linum usitatissimum
Phragmidium tuberculatum	Rosa sp.
" violacearum	Rubus fruticosus agg.
" disciflorum	Rosa sp.
FUNGI IMPERFECTI	
Ascochyta pinodella	Pisi sp. cultae
Septoria pyricola	Pyrus communis
" apii graveolentis	Apium graveolentis
" sp.	Triticum sp.
Stigmina platani	Platanus occidentalis

BOTANICAL EQUIPMENT

The majority of the work undertaken was of a qualitative nature requiring no specialised equipment. Sampling and quantitative techniques made use of the equipment listed below which was sufficient for the programme.

1 Abney Level
1 100 ft. Tape
1 Metre Scale
2 1 ft. Quadrats
2 8 in. Quadrats
1 Pin Quadrat
1 ¾ in. Auger
1 Prismatic Compass
1 Travelling Microscope
2 Dissecting Microscopes
1 Bottle Cotton Blue
1 Bottle Lactophenol
1 Bottle Phloroglucin
1 Bottle Hydrochloric Acid
1 Bottle Thymol Blue Soil Indicator
1 Bottle Methyl Red Soil Indicator
1 Bottle B.D.H. Universal Soil Indicator
1 Soil pH Colour Chart
pH Indicator Papers
1 Bottle Barium Sulphate
1 doz. Test Tubes and Corks
1 Test Tube Brush
2 Bottles Absolute Alcohol
4 Bottles Distilled Water
Glass Slides, Cover Slips, Labels.
4 doz. Polythene and Glass Sampling Tubes
2 Rolls String

II(B) ZOOLOGY

1. INTRODUCTION

Among the eleven members of the expedition were two Zoologists. Their task was to carry out a survey of the fauna of Euboea. On arrival at Euboea, it became quite obvious that, considering the richness of the insect fauna, a thorough survey of all the phyla in as many ecological habitats as possible would be difficult if not impossible in the time available to us. We therefore, came to the conclusion that it would be more fruitful if we paid particular attention to one or two groups of the fauna while at the same time making general notes on the other members of the fauna. The groups that we chose to make a particularly thorough study of were the Orthoptera, Lepidoptera, Coleoptera and the birds. It will be pointed out here that our choice of the three orders of the class Insecta is no indication of the abundance of these three orders over the other orders but was merely a matter of personal inclination. Observations were made from the last week in July to the first week in September and the notes are relevant only to that period. In attempting to make observations and collections from as wide a variety of ecological habitats as possible we found that we had examined the following ecological niches:-

beach and sand dune
rocky prominences
salt marsh
fresh water streams
grazed and ungrazed plains
field and fallow
dried river beds
pine woods
fir woods
scrub woods

It will be appreciated that not all the ecological niches were examined to the same extent, those near to the base camp were obviously examined more thoroughly than those at a distance. It should be pointed out that a large amount of our time was spent collecting specimens belonging to the three orders of insects and in also observing birds and animals.

Many of the local children and youths could be persuaded to collect specimen varying from birds to ants, in return for sweets etc. This however, was discouraged when certain enterprising youths started to bring in maimed birds, caught in various ways; including an Owl. Some of the youths were experts with a catapult and a few were careful enough with insects to provide useful specimens.

F. NOTES ON GENERAL FAUNA

The fauna as a whole is a continental island type and consists mainly of animals typical of the Mediterranean region. This is not surprising considering the geographical position of the island and its nearness to the mainland continent. Perhaps the most conspicuous and well represented class of animals was the insects. No one could fail to notice them. They abounded on the ground and occurred in a variety of ecological niches and were associated on a variety of plants. Fields and fallow were very well populated with red and blue winged grasshoppers (Calliptamus species and Oedipoda coerulescens), and as one took a stroll through one of the fields one could not help but notice the masses of these insects making short flights away from one's path, apparently disturbed by approaching footsteps. The surrounding pinewoods were by no mean free from insects. Cicadas occurred in very large numbers and were found on practically every pine tree. Their capacity for sound production could not be matched by any other animal with the possible exception of the cry of the molested donkey. During the night, however, the almost deafening and extremely monotonous noise of the cicadas was taken up by the less disturbing chirps of the crickets. The latter sound could only be distinguished during the day by the trained ear as a regular chirp.

Roadside flowers [illegible] great variety of butterflies, beetles, wasps and bees. Ants occured in very

large numbers making their subterranean nests on hill slopes, in fields, among rocky crevices and below fallen tree trunks. Not every hole in the ground was occupied by ants and it was observed that many of them harboured ant-lions.

The Arachnids were represented by a number of scorpions, commonly found sheltering below a fallen branch, and by a large number of spiders, some of which were very brightly coloured. The webs made by these spiders were often conspicuous and not an uncommon sight in the pine woods.

Molluscs were most commonly found along the western shore where the shore was rocky at many points. Terrestrial molluscs are poorly represented.

Below the clear water of the shore one would spot a number of black spiny objects. These sea urchins were extremely common along the shore at Limni but were never observed on the eastern shore of the island, at Kiavisi, where the shore is very sandy and faces the Aegean Sea.

No freshwater fish were recorded. This is mainly due to the fact that most of the streams and rivers were seasonal and dry during the summer months. This was expected and hence insufficient equipment was taken to produce any positive results. In the few deep pools and streams only the occasional water snake was seen.

Amphibia were represented by numerous frogs, probably all belonging to a single species and by a large toad

Bufo bufo.The frogs were confined to pools in the dry river bed, irrigation ditches including those in maize fields and short streams emerging from springs. Female frogs were a light greyish brown colour, with dark brown blotches on the head and back. The male, although having the same basic ground colouring, had a bright green head with a green and yellow stripe down the centre of the back. For some time these were thought to be seperate species, as the males were much less commonly seen and appeared to be smaller. However, after tracking down the croaking male it was seen displaying before the female. The male would start croaking in the normal manner before a rather indifferent female. After sometime it was observed to inflate its vocal sacs at the sides of its head and emmit a higher pitched note. Inflation of the sacs continued until a very shrill note was obtained. This pattern of behaviour was repeated over and over again with short period of rest, before an apparently indifferent female. Mating, however, was not observed. Tadpoles, some as long as three quarters of an inch swam in several of the pools even as late in the year as July. The toad appeared to be more abundant around Achmetaga than in any other district and some reached four and half inches in length. They appeared to be even larger when handled due to their habit of puffing themselves up.

Among the vertebrates, the reptiles were by far the best represented both in numbers and in species. Tortoises, Terrapins, Lizards, Land and Water Snakes occured in quite large numbers. Whilst walking through the undergrowth of a pine wood it was not an uncommon sight to see a tortoise lumbering along, or to come across a shell containing a partly devoured carcass. These were the margined tortoise (Testudo marginatus) and not the so-called Greek Tortoise of the pet shops, which in fact come from North Africa. Testudo marginatus was particularly abundant in pine woods, grape vines and olive orchards being recorded around Pharacla, Strophilia, Limni, Achmetaga and Kiavisi. The largest specimen seen was near Strophilia which was nine inches long and had two extremely well developed marginal flares to the posterior giving the tortoise a characteristic shape. The smallest specimen measured one point two inches in length and was observed on 29th August. Terrapins were common in pools and streams, being recorded in a stream near Strophilia, in a river near Kiavisi and in Lake Langadhas in northern Greece.

Among the reptiles, lizards were by far the most common along the margins of the pine woods but were also observed on the lowland plains and high up mountains well over 4000 feet above sea level. They were extremely timid disappearing into a bush of Poterium spinosum or up a tree

at the slightest disturbance. They were most often observed in patches of sun and many were without tails, presumably lost at some time and many others had tails in various stages of regrowth. This was thought to be due to the abundance of preditors particularly birds, although none were actually seen being attacked. This may account for the fact that lizards were more common near habitation where birds of prey would seldom stray. The protection afforded by a spiney bush like Poterium spinosum probably explains the correlation between the two.

Several snakes were seen on occasions but one came across them by chance and in fact they were rather rare or at least very well disguised. The most common species seen was the Tessellated Water Snake, which rapidly dived for cover when disturbed. Most of the snakes seen were olive brown - olive grey and rather inconspicuous.

On the whole the mammalian fauna was poor and most of those observed were nocturnal. This may be due to the unfavourable climatic conditions; the mid-day sun temperature often exceeding 100 degrees in the shade with rather low humidity during the summer months.

A profusion of birds of many different species frequented the whole area and a separate section has been devoted to them.

3. COLEOPTERA - BEETLES

Although a fairly representative collection of beetles was made on the island so far very few have been identified to species with any degree of certainty. A large number are of Genera completely unrepresented in the British fauna.

The biggest problem facing a person who has previously only had experience of field collecting in England is the fact that most methods used in England are completely impractiable in Greece. As ground vegetation could nowhere be termed "lush" at this time of the year it seemed likely that the beetles be more concentrated amongst the plants present. However, sweeping proved a rather hazardous business. Practically every plant was xerophytic in form, and grasses were nowhere abundant. As a result one was continuously freeing the sweepnet from a tangled mass of thorns. However, even once the beetles had been netted one was faced with a new problem. As soon as the net was opened almost every beetle took to flight. Similarly in beating trees and shrubs, before the beetles hit the net they had taken wing and flown off.

Euboea was by no means typical of Greece due to its well timbered hills which were a rare sight on the mainland where near desert conditions prevailed. As a result beetles with wood-boring larvae were a fairly common sight on the island yet none were seen anywhere during

my travels on the mainland. The majority of these beetles were pests of the large Plane trees that occurred mainly along the river banks, rather than the more abundant pines. Larvae tunnels, in dead trees, up to half an inch in diameter were common. A number of the adults were caught on the wing, flying low along pathways on the edge of woods at dusk. These mostly consisted of Lucanus cervus and all specimens thus caught were males. A single Dorcus parallelopipedus was found in a decayed pine log. Many members of the family Cerambycidae were seen at rest, or flying in the wooded areas. Far more were seen than were ever caught since, when disturbed they would fly up over the tree tops out of sight. Among those collected were Cerambyx heros, Hylotypes bajulus and Leptura sp. Several large members of the family Buprestidae were caught on the wing in olive groves near the Coast and three or four smaller species were collected in pinewoods around the village.

With regard to the ground fauna, the island was more typical of the country as a whole, with Carabidae and Tenebrionidae being the most representative families. Members of the former family consisted of a few unknown Genera, but the remainder all belonged to the sub family Harpalinae, which included Chalaenius spp. Dembridion Spp. and Pterostidus sp. The Tenebrionids, with the exception of the occasional Blaps sp. were all of var. British Genera.

The brilliant coloured chafers of the family Scarabidae were a common sight on Plane trees where large gatherings of them would rapidly reduce the leaves to their main ribs. These chafers ranged in colour from bright green, through darker greens, and blues to near black and consisted mainly of Cetonia spp., Oxythyrea sp. and Anomala sp. In the same family are the Dung Beetles which were represented on the island by Onthophagus spp. and Oniticellus sp. These beetles were seen only very occasionally but when present they were always in large numbers. This was due to the fact that they could feed only on freshly deposited dung which soon became dried out in the sun and of little or no food value to them.

On the flowerheads of plants growing by the roadside and on waste land numerous closely allied beetles of the family Heteranera were to be seen during July and August. These beetles were again of a non-British Genus and had a variety of markings in warning colouration: with either orange-yellow stripes or spots on a black ground colour. The same orange colour was replaced by a deep red although otherwise the beetles appeared very similar. There was a noticeable lack of Curculionidae and only relatively few Apion spp., Strophosomus sp. and others were collected. Replacing them, to a certain degree, were the Bruchidae which were comparatively common. These presumably fed on the variety of beans which were

commonly grown as a second crop together with maize. A few members of the family Chrysomelidae were also collected on wayside flowers including species from the genera; Cryrolina, Hortica, Labidostomis, Cryptocephalus and Galerucella.

4. ORTHOPTERA - GRASSHOPPERS

Specimens of this group were mounted and brough back to Great Britain for identification. A short description of the major groups collected, based on field notes and subsequent identifications is set out below.

A. Mantidae (Praying Mantids)

a.) Rivetininae

i) Ri etina fasciata (Thunberg)

Mature males and females as well as nymphs were found near Kiavisi especially on plants frequented by large numbers of wasps and bees. The adults, which were dark brown (and cryptically) coloured, together with nymphs of lighter brown were observed in the last week of August.

ii) Rivetina sp.

A single specimen was collected. This was distinctly related to R. fasciata, though of a much darker colour, with a general greyish powdery appearance. The specimen, a female, was found in a similar locality to the above species.

b.) Manteinae

i) Mantis religiosa L.

This was a very common insect especially in corn stubble. A number of colour variations were recorded, some being green others yellow and yet others pale brown. A nymph was captured on 19th A ugust.

B. Gryllotalpidae (Mole Crickets)

i) Gryllotalpa gryllotalpa L.

A single female specimen was found amongst a hea of lime at Pharacla.

C. Tettigoniidae (Long Horned Grasshoppers)

a.) Tettigoniinae

i) Tettigonia viridissima L.

All the specimens were collected from a field between Pharacla and Strophilia while feeding on the flowers of the Welted Thistle. These bright green relatively large insects had the following dimensions.

Male 29-31 mm

Female 38mm (measured from frons to last abdominal segment)

Forewing (tegmina)

Male 47-50 mm

Female 51mm Ovipositor: 26mm

Three adult males and a single female were collected.

b.) Saginae

i) Saga sp.

One male specimen was caught at Katunia. It was found resting on a shrub in the first week in August. This specimen was pale green in colour with prominent dark brown patches at the sides of each abdominal terga.

Length:	57mm	Pronotum:	11.5mm
Forelimbs:	22.5mm(femur)		21mm(tibia)
Hind Limbs:	46mm(femur)		52mm(tibia)

ii) Saga sp.

One female specimen was caught in the third week of August, which was larger than the male and of a different species. (N.B. Chopard noted that the females of Saga sp. are very seldom found in France and we were lucky to have found a male and female specimen, even though they were of a different species).

Length	63mm	Pronotum	11.5mm
Forelimbs	21mm (femur)		22mm (tibia)
Hindlimbs	48mm (femur)		49mm (tibia)
Ovipositor	32mm		

c.) Decticinae

i) Decticus albifrons (Fabricius)

Adult males and females were found in August. They were quite common in local fields associated with several shrubs. Specimens were collected from Katunia, Pharacla and Strophilia throughout July and August and were easily detected by their regular chirp. When disturbed they made flights of 30-50 feet at a height of about 4 feet above the ground.

ii) Platycleis sp.

Only one specimen, an adult male, was collected from the headlands of a stubble field. It was found resting on a spiny plant, Centurea solstitialis on 25th July.

iii) Eupholidoptera smyrnensis (Brunner)

Adult males and females were found in an ecological

niche characterised by unusual dampness and shadiness, about two miles South West of Kiavisi. All specimens were found associated with plants which were abundant in that area. These stout, short bodied brachypterous hoppers, brown in colour with a conspicuous black patch on the sides of the large pronotum, hop about rather clumsily due to the large body size. Two males and a single female were collected.

iv) Sepiana sepium (Yersin)

One adult female was collected from the edge of a cornfield resting on Vitax sp. on 25th July. Another specimen was collected from a clearing in the pine woods on 8th August and was found resting on Poterium spinosum.

v) Incertana incerta (Brunne)

Three adult females were collected on 8th August from a corn stubble S.W. of Pharakla, already covered with weeds. The females were found associated with Atriplex sp. and the weeds in the stubble. None were found in Zea maize. In a different locality not far from the cornfield four males were found associated with perennial bushes including Poterium spinosum, Thymus sp. No females could be found in the latter ecological niche.

vi) Phaneoleis germanica (Henrich-Schaeffer)

A single female adult was found on 8th August in a similar locality to the male I.incerta.

(N.B. Three other specimens also from the same locality could not be identified).

d.) Phaneropterinae

i) Tylopsis liliifolia (F)

Two colour variations of this very elegant species were collected, one light green in colour and the other light brown in colour. The light green variety was found to be more common and was found in a variety of ecological niches. Most commonly they were found associated with a species of Cistus. They were also found amongst tall weeds in corn stubbles and still others were found on Ononis sp. The brown variety, though less commonly encountered was also found in similar ecological niches to the former variety. Nymphs both green and brown in colour were collected on 8th August and on 19th August from the edge of a pine-wood on Cistus sp.

ii) Acrometopa syriaca (Brunne)

An adult male was brought in by the villagers on 25th July.

e.) Conocephalinae

Conocephalus fuscus (F)

Mature adults of both sexes, nymphs of both sexes and recently metamorphosed adults were found associated on very

soft grass in the same ecological niche as Eupholidoptera sinyrnensis. They were very numerous in that area which was characterised by dampness and shadiness.

f.) Copiphorinae

Homorocoryphus nitidulus (sco.)

A single adult male was collected from the same ecological habitat as C.fuscus. It was very bright green except for the tarsi and hind tibia which were brown in colour.

D. Acrididae (Short-horned Grasshoppers; Locusts)

a) Catantopinae

i) Calliptamus sp.

These species were by far the most common and numerous of all the Orthoptera. They occurred in very large numbers and most commonly on corn stubble as well as in a variety of other ecological niches including dried river beds, pine-woods, firwoods, saltmarshes and rocky outcrops. Specimens were found at all altitudes from sea level to the highest mountains that were examined, (4000 feet above sea level). So far as field observations are concerned, three varieties clearly distinguishable in colour, as well as occurring in seperate ecological habitats could be recognised. By far the most abundant and frequent were those with a general chestnut brown colour on the head, thorax, abdomen and on the legs excepting the inner ventral portions of the femur, which together with the hind tibia and tarsi, and the anal

portion of the hind wing are a bright "eosin" red colour. About three thousand feet above sea level, near the summit of Strongitra, the Calliplamus sp. which occurred there, although having the usual chestnut-brown general colour were distinctly crimson-purple instead of the "eosin" red of the former variety. A third colour variation was een in those specimens that were collected from a salt-marsh near Kriavisi. These were generally dark brown - black with the red portions coloured crimson.

The males of the species were distinctly smaller than the females. Copulation was observed at various times from the last week in July to the last week in August. Flights by these insects were short, usually 2-6 yards, rarely more.

Length:	male	15-22mm.	female	25-32mm
Forewing:		10.5-16mm.		17-26mm.

ii) Anacridium aegyptium (L)

A number of adults and nymphs were collected in the second week in August at Achmetaga. The nymphas were green in colour to begin with, while those just ready to metamorphose took up a pale brown-orange colour. The adults were brown in colour and very good fliers, having been observed to make flights of 40-60 feet at a height of about 3 feet above the ground.

iii) Perzotettix giornai (Rossi)

These relatively small insects were collected from amongst weeds in corn stubble about a mile S.W. of Pharakla.

Body length: male 13.16mm. female 14mm.

Four males and one female were collected.

b' Oedipodinae

i) Locusta migratoria L. (Migratory locust)

Solitary specimens were collected from various habitats at various times during our stay. Some were collected from the salt marsh at Kriavisi, and others from fields but none were found in pine or fir woods.

ii) Acrotylus longipes (Chorp)

These were collected from a sandy beach at Kriavisi, and were later found to be females. They displayed a variation in colour of the anal portion of the hind wing and various shades of orange - pale yellow were recorded. Being easily alarmed they were difficult to capture.

iii) Acrotylus patruelis (Henrich-Schaeffer)

Specimens were collected from a variety of habitats namely, a sandy beach at Kriavisi, an olive vine at Achmetaga and on the margins of pinewoods at Pharakla. All specimens collected turned out to be adult females.

iv) Oedaleus decorus (Germar)

Mature males and females were collected from a field at the edge of a pinewood where the vegetation consisted mainly of bracken. The specimens were collected at

various times during our stay and only mature adults could be found.

v) Oedipoda germanica (Latr.)

These particularly attractive grasshoppers were found quite commonly on hillslopes around Strophilia where the ground is very dry and the vegetation consisted mainly of low shrubs, bracken and Centurea sp. In the field they were easily recognised by a prominant black band on the hind wing enclosing a bright red proximal portion of the wing. Specimens were collected at various times during the stay, most of which turned out to be females.

vi) Oedipoda coerulescens (L)

These insects were very common, widespread and were usually associated with Calliptamus sp. They were found in maize fields and stubble, pinewoods, firwoods and also reported from the highest parts of the island examined. Resembling O.germanica except for the proximal portion of the wing which was blue in colour, they were strong fliers, making flights of about 15-25 yards.

vii) Sphingonotus rubescens (Walk)

Three female specimens were collected from rocky prominences at Kiavisi on 1st September.

viii) Aiolopus strepens (Latreille)

This was very common in stubble and in a variety of ecological niches. They were found in the same habitat as, and commonsly associated with, Calliptamus sp., although

GENERALLY in fewer numbers. Four males and sixteen females were collected.

c) Truxalinae

i) Ramburiella turcomana (F.W.)

One male and two female specimens were collected from a field near Pharacl .

ii) Chorthippus vagans (Eversmann)

One male specimen was collected from a similar habitat to Incertana incerta and Sepiana sepium.

iii) Chorthippus dorsatus (Zettersteat)

These were collected from a field in a clearing in a pine wood near Pharacla. The specimens were found associated with Ononis sp. A large number of Mantis religiosa were also found in the same locality.

d) Acridinae

i) Acrida bicolor (Thunb) sub sp. mediterranea (Dirsh)

These specimens were all collected from a saltmarsh at Kiavisi, where the vegetation consisted mainly of Juncus sp. and Solidago sp. The insects were quite strong fliers and were in the habit of flying into the rushes when alarmed, making capturing difficult and sometimes painful.

ii) Acrida sp.

A number of nymphs were found in a field near Pharacla associated with Scolymus hispanicus and Mentha sp. One adult was found in a field near Strophilia.

LIST OF ORTHOPTERA COLLECTED

A) MANTIDAE

a) RIVETININAE
- i) Rivetina fasciata (Thunberg) 2♂, 1♀, 1n.
- ii) Rivetina sp. 1♀

b) MANTINAE
- Mantis religiosa (L) 1♂

B) GRYLLOTALPIDAE
- Gryllotalpa gryllotalpa (L) 1♀

C) TETTIGONIIDAE

a) TETTIGONIINAE
- i) Tettigonia vividissima (L) 3♂ 1♀

b) SAGINAE
- i) Saga sp. 1♂
- ii) Saga sp. 1♀

c) DECTICINAE
- i) Decticus albifrons (Fab) 2♂, 2♀
- ii) Platycleis sp. 1♂
- iii) Eupholidoptera smyrnensis (Brunne) 2♂, 1♀
- iv) Sepiana sepium (Yersin) 2♀
- v) Incertana incerta (Brunne) 4♂, 3♀
- vi) Rhacocleis gemanica (Henrich-Schaeffer) 1♀
- vii) Rhacocleis sp. 3♂, 4♀

d) PHANEROPTERINAE
- i) Tylopsis lilifolia (F) 5♂ 5♀, 2n♂
- ii) Acrometopa syriaea (Brunne) 1♂.

e)CONOCEPHALINAE — Conocephalus fuscus (F) 1♂ 3♀, 2n♂

f)COPIPHORINAE — Homoroceryphus nitidulus (scop) 1♂

D) ACRIDIDAE

a)CATANTOPINAE — i)Calliptamus sp. 6♂, 9♀

ii)Anacridium aegyptium 1♂, 2♀, 3n♂

iii)Perzotellix giornai (Rossi) 4♂ 1♀

b)OEDIPODINAE — i)Locusta migratoria(L) 2♂ 1♀ , 3n♂

ii)Acrotylus longipes(Chorp) 5♀

iii)Acrotylus patruelis(Henrich-Schaeffer) 8♀

iv)Oedaleus decorus(Germar)2♂ 3♀

v)Oedipoda germanica(Latr) 1♂ 4♀

vi)Oedipoda coerulescens(L) 2♂ 4♀

vii)Sphingonotus rubescens(Walk)

viii)Aiolopus strepens(Latreille) 4♂ 16♀

c)TRUXALINAE —)Ramburiella turcomana(F.W.) 1♂ 2♀

ii)Chorthippus vagans
(Eversmann) 10♂

iii)Chorthippus dorsatus
(Zetterstedt) 20♂ 4♀

d)ACRIDINAE

i)Acrida bicolor(Thunb) sub. sp.
mediterranea (Dirsh) 4♂ 4♀

ii)Acrida sp. 9n

DISCUSSION and CONCLUSION

All the specimens collected were typical of the 'Mediterranean Region'. With the exception of Incertana sp. all the genera are represented in France. The species not recorded in "Fauna de France" Chopard, 1951, included:

Incertana incertus (Brunne)
Eupholidoptera smyrnensis (Brunne)
Acrometupa syriaca (Brunne)
Acrotylus longipes (Chorp)
Ramburiella turcomana (F.W.)

Considering the closeness of the island to the mainland and the fact that the island was separated off from the mainland relatively recently one cannot be surprised that all the Orthoptera collected are typical of the Mediterranean region. No endemic forms were identified further suggesting a relatively recent separation from the mainland.

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5. LEPIDOPTERA - BUTTERFLIES

Butterflies were well represented around Pharacla and those described below were recorded around the village unless otherwise stated.

Papilio machaen - British Swallowtail

First seen 27th July at 4000 feet on the summit of Oros de Kandhilion and also on the Hog's Back at 523 feet 28th and 31st July and at Pilli 300 feet on the coast on 11th August.

Papilio Sinon

First seen 19th July and present until first week of September in the woods and on high ground. A Swallowtail with two black bands from the costa of the forewing to the inner margin together with two shorter bands.

Charaxes jasius

First seen on the top of the Hog's Back 31st July. In late August and early September pairs of these butterflies became a more common sight on the Fig trees at Pharacla. A specimen was also recorded near Strophilia and Achmetaga. This is the only species of the two tailed African genus of swallowtail to appear in Europe. Colouring - blackish above the orange outer margins to both wings, broken by rays with the underside pale chocolate. Of the two tails that nearest the anal angle is the smaller. All specimens recorded were of the smaller, second yearly emergence; the main brood hatching in May.

Pieris brassicae - Large White

Mid August in sheltered woods. Common at Delphi on the mainland in the third week of August.

Pieris rapae - Small White

Common on wayside flowers August - September.

Pieris napi - Green Veined White

Small numbers on roadside flowers August.

Leptidea sinapis - Wood White

Common at edges of woods and in sunny glades July - September.

Colias croceus - Clouded Yellow

Several in cultivated areas July - September.

Colias hyale - Pale Clouded Yellow

Several at edges of woods and in cultivated areas July-September.

Gonepteryx rhamni - Brimstone

Recorded only on rocky slopes. Kandhilion 27th July. Hog's Back 28th July.

Limentitis camilla - White Admiral

Common in sheltered woodland glades July - September.

Venessa cardui - Painted Lady

Very common on wayside flowers July - September.

Venessa atlanta - Red Admiral

One possible record at Pharacl in August. A few seen on the mainland at Elasson on 25th August.

Argynnis paphia - Silver Washed Frittilary

On wooded slopes of Kandhilion 27th August and near Delphi 21st August.

Argynnis euphrosyne- Pearl Bordered Frittilary

Several in clearing at the edges of woods - August.

Argynnis aglaia - Dark Green Frittilary

On thickly wooded hillsides. Kandhilion 27th August, Khronia 5th August.

Argynnis lathonia - Queen of Spain Frittilary

In woodland clearing-August.

Argynnis cydippe - High Brown Frittilary

Few in woodland paths near Achmetaga. 8th August and at Khronia 4th August.

Melitaea cinxia - Glanville Frittilary

Common in woodland paths near Achmetaga 8th August.

Eumenis semele - Grayling

Common in Pine woods July - September.

Pararge aegeria - Speckled Wood

Few in woodland clearing August - September.

Pararge megera - Wall Brown

Common on edge of wooded areas August - September

Maniola Jurtina - Meadow Brown

Common in cultivated clearings July - September.

Coenonympha tullia - Large Heath

Common on cultivated areas, August - September.

Coenonympha pamphilis - Small Heath

Common on woodland clearing and cultivated areas, July - September.

Lycaena phlaeas - Small Copper

Common in open woodland and at edge of woods July - September. A large variety of colour forms were seen in this species.

Everes argiades - Short Tailed Blue

Common in fields, particularly in Lucerne and woodland glades, July - August.

Lampides boeticus - Long Tailed Blue

Common in cultivated areas especially maize fields, July - August.

Plebejus argus - Silver Studded Blue

Common in woodland clearings August.

Aricia agestis - Brown Argus

Common at edge of woods, July - August.

Polyommatus icarus - Common Blue

Common in most habitats, July - September.

Thecla quercus - Purple Hairstreak

In maize fields and woodland clearings Pilli 9th August.

Pyrgus malvae - Grizzled Skipper

Regularly recorded by roadsides and on pathways, August-September.

Thymelicus sylvestris - Small Skipper

Several recorded by roads and pathways, August - September.

Ochlades venata - Large Skipper

Occasionally on wayside flowers August.

Polygonia c-album - Comma

Recorded only near coast. Limni 4th August, Pilli 9th August.

Due to the loss in transit from Greece of virtually all the butterfly specimens the above list has been compiled from field notes. Several of the butterflies caught on Euboea were undoubtedly of non-British species or varieties and the Comma may well have been a different, but closely allied species.

Both Charaxes jasius and Papilio sinon were observed to exhibit territorial defence. Having once decided on a suitable territory these two swallowtails would patrol their bounds returning to only a few selected perches to rest. This behaviour was much more marked in the former species, which was also by far the stronger flier. This African Swallowtail was continually chasing off other butterflies, beetles and winged insects. On one occasion a specimen was seen to attempt to ward off a warbler which entered its territory. The bird left, but one wonders whether it would not have done so in the absence of the butterfly. However, the swallowtail's wings measured 3.2 inches across and may well have offered a disturbing sight to any intruder. The Charaxes also resented my presence

in its territory and flew close by on numerous occasions at great speed. Spurred on by its successful rout of the warbler, the butterfly now plucked up enough courage to fly straight at me and brushed my arm with its wings in an attempt to move me.

There was much scope for rewarding observation of the great variety of butterflies, and but for the unfortunate loss of the specimens much more could have been recorded, probably including at least a few species endemic to Euboea.

6. OPHIDIA - SNAKES

Although no particular study was made of the snakes on the island several were observed and a short account of each species recorded follows below:

Tropidonotus tessellatus - Tessellated Water Snake

Essentially an aquatic species seldom found far from water, and most commonly seen in small fast flowing streams or irrigation ditches. An excellent swimmer, diving for shelter when disturbed. Olive, olive-grey or brown above with dark spots usually arranged quincuncially on the back. A more or less shaped dark band was found on the nape and the lower parts were marbled or checkered with black. In some specimens the lower parts were entirely black.

Zamensis gemonensis - European Whip Snake

Usually seen sunning itself on a path or clearing in dry scrub land or on the edges of woods. The upper parts were pale olive or yellowish brown with blackish crossbars behind the head and numerous small black spots. The lower parts were yellowish-white with yellow sides to the head.

Coluber longissimus - Aesculapian Snake

This snake was never seen in the sun but was usually confined to woods and areas of scrubland and appeared to seek shelter from the mid-day sun. Above, the skin was yellowish-grey to dark brown with the lower parts a uniform pale yellow. The upper lips were yellow widening into a triangular patch behind the eye with a dark band

on the temple and a yellow nuc ial blotch in front of the nape.

Coluber leopardinus - Leopard Snake

Frequenting rough scrubland, this snake proved to be an excellent climber among steep, rocky outcrops. The upper parts were grey to pale brown with a single dorsal series of dark brown edged transverse spots and a lateral alternating series of smaller dark spots. The lower parts were checkered with black and white and a dark -shaped marking appeared on the nape.

Coronella austriaca - Smooth Snake

As with the previous species this snake was found on stoney wasteland, dry river beds, and wooded slopes. The colouring was grey or brownish above with a series of paired dark brown or black spots. The back of the head was covered with a black patch and a dark streak passed along the side of the head, from the nostril to the angle of the mouth, passing through the eye. The underside was brown or greyish-black.

Colcopeltis monspessulana - Montpellier Snake

This swift moving snake occured in the pinewoods, especially where the undergrowth was thickest. The upper parts were greyish or olive with dark markings edged in part with yellow contrasting with the yellowish lower parts which had occasional dark spots.

A considerable number of lizards were seen on the island and probably as many as twenty species were observed. Due to our lack of knowledge and literature on the subject no special effort was made to collect these reptiles. However, there is ample scope in this field for an expedition equipped with adequate preserving spirit and containers.

7. MAMMALIA - MAMMALS

There was a general paucity of mammalian species to be found on Euboea and several of those observed are usually associated with more temperate regions. Observations have been listed below together with remarks in several cases:

Erinaceus europaeus - Hedge Hog

Three young hedge hogs were brought into the village on 22nd August and reared on decaying fruit especially over-ripe grapes. A mature male hedge hog was seen on the outskirts of the village on 27th August.

Sorex minutus - Pigmy Shrew

A young pigmy shrew was found amongst loose earth on a dry river bed one mile S.W. of Pharacla on 17th August.

Myotis nathereri - Natherer's Bat

Pipistrellus pipistrellus - Pipistrelle Bat

Eptesicus serotinus - Serotine Bat

Nytalus noctula - Noctula Bat

All the bats were observed, usually at dusk in and around Pharacla during the months of July and August.

Talpa Europaea - Mole

A single specimen was found dead on a path during August. Mole runs were observed in stubble field although 'mole Hills' were rarely recorded.

Lepus timidus - Brown Hare

A single specimen was observed on hills North of

Achmetaga in early August.

Mus musculus - House Mouse

This was particularly common in the village throughout our stay.

Rattus norvegicus - Brown Rat

Common in the village in grain stores and around the outhouses.

Vulpes fulva - Red Fox

A single vixen was heard was heard calling at night on several occasions during August near Achmetaga.

Mostela nivalis - Weasel

One specimen was seen, close to, at Khronia in early August, dodging amongst rocks within eight feet of the sea.

Mustela erminea - Stoat

One specimen was recorded near a dry river bed at Pharacla and another was observed on the slopes of Mt. Parnassus, Delphi, both in August.

Martes Martes Martes - Pine Marten

A single pine marten was observed amongst pine trees at Delphi.

At no time was the feeling of "aliveness" to be found in the woods; possibly due to the absence of less shy animals such as the squirral.

8. ORNITHOLOGY - BIRDS

The account of bird life observed during the expedition is divided into three parts.

Part I A general impression of the birds seen while on the journey and around the camp.

Part II Birds endemic to Euboea

Part III A detailed record of field observations.

Part I.

It was not until we had passed through a storm in Yugoslavia and were in the Skoplje region that birds very different to our own began to show themselves. Great White Herons stood in the shallows like isolated statues beside the River Vardar which cut its way through the mountains into Northern Greece. In the more hospitable and cultivated areas turquoise blue and brown Rollers perched on telegraph wires, while brightly coloured Bee-Eaters swooped around displaying their unusually shaped tail feathers. Occasionally Golden Orioles were flushed from the wayside bushes by the train to fly off across the fields. Soon after leaving the Vardar River Valley and entering the Greek Mountains these conspicuous birds gave way to Hooded Crows, often flying along in considerable numbers. I suppose that for most of us our first glimpse of a vulture occured in the Pindus Mountains, where the occasional Egyptian Vulture soared high overhead. Very little else of

interest was noticed thereafter until we reached Pharacla, possibly due to three nights with little sleep.

Red Rumped Swallows were common around the barns and outhouses in the village and one elaborate mud nest was plastered to a beam of a frequently used barn, with the pair apparently undisturbed by the constantly fluttering chickens and numerous rats. A Hoopoe with a large crest often rose from among crickets and cicadas in the stubble fields around the village while Red Backed and Great Grey Shrikes frequented the isolated Judas trees. While small warblers and finches abounded in the pine trees vultures floated silently overhead, to the background of the raucous call of Ravens. Probably the most memorable sight occured during the ascent of Kandili when three Golden Eagles soared high above the fir trees capping the mountain.

Part II

Since the autumn migration of birds southwards did not appear to start until the second week in August we were able to observe the birds native to the locality. Unfortunately, during this period the cicadas were at their best almost completely drowning any bird song.

The most common birds to be seen on the island were the Goldfinches, Sparrows, Chaffinches, and Great Tits which occured in small flocks in the pine woods together with a few Blue Tits, Cirl Buntings, Scandinavian Warblers

and Blackbirds. Hooded Crows were frequently present amongst the stubble together with a few Turtle Doves. Alpine and Common Swifts circled above occasionally, while Red Rumped and Common Swallows plastered their nests under beams in outhouses and barns. At night the maize fields would be alive with the calls of Quail and Nightjars although only the latter were seen regularly, flying low in the maize. Both Tawny and Little Owls were resident in the vicinity of the village.

In the pine woods Longtailed Tits, Greenfinches, Crossbills, Jackdaws and a Short Toed Treecreeper were occasionally observed. The stubble nearer the village was soon overgrown with a deep green Heliotrope sp. amongst which Crested and Woodlarks foraged, often accompanied by Wheatears. Four species of Shrike were usually occupying some of the small shrubs bordering the fields while several Wagtails walked around the now dry river bed.

Apart from the raucous call of the Ravens the bird life was dominated by birds of prey, several of which were usually to be seen silently soaring above the still valleys in the heat of the day. Buzzards, Egyptian and Griffin Vultures and Short Toed Eagles were a common sight usually patrolling in pairs. Most of their time, however, was spent effortlessly soaring in the thermals around Oros de Kandhilion and amongst the mountains of the coastal range. Golden Eagles, Kestrels, Goshawks, Peregrine,

Honey Buzzards and Eleonora's Falcons were also observed on numerous occasions.

With the onset of the Autumn migration different birds passed through the village daily. Various Buntings and Warblers did not linger long but numerous Shrikes often waited two or three days to feed before flying South again. The occasional flocks of waders, Wagtails, Bee-Eaters and Herons were seen or heard flying over the village from one coast to the other usually from East to West.

The absence of open or running water on Euboea offered no enticement to the migrating birds and thus the ornithologists had to journey elsewhere to witness birds of passage.

Part III

The areas covered by the record of field observations were:-

Athens, Delphi and Levadia in ATTICA.

Lamia, Dhomokos, Farsala, Larissa, Elasson and Miloghousti in THESSALY.

Kozani, Dhrepanon, Lake Langadas and Salonika in MACEDONIA.

All the other places mentioned were on the island of EUBOEA, mainly within twenty miles of Pharacla.

Podiceps cristatus - Great Crested Grebe.

Two were seen at Lake Langadas on 29th August.

Podiceps ruficollis - Little Grebe.

A pair at Old Kirinthos, 29th August to 5th September.

Procellaria puffinus - Manx Shearwater.

We have records from 5th August to 5th September of small numbers at Khronia, Limni and Old Kirinthos with a maximum of thirty bird off Khronia on 6th August.

Procellaria diomedea - Cory's Shearwater.

Less common than P.puffinus but we have records from 4th August to 5th September, with a maximum of six at Limni on 25th August.

Pelecanus onocrotalus - White Pelican.

Between seven and sixteen were seen on Lake Langadas from 26th to 29th August. Numbers fluctuated daily and included some immature birds. Each afternoon they would assemble together with many herons, terns and gulls to feed on scraps of offal thrown into the lake by the local fisherman.

Ardea species

Eighteen unidentified herons flying south in V-formation early in the morning of 18th August, at Achmetaga. The only previous record we can find of this behaviour is Mountfort (1958).

Ardea cinerea - Heron.

A flock of thirty at Lake Langadas from 26th August

to . 29th August appeared to be stationary, but between 31st August and 5th September numbers at Old Kirinthos fluctuated from six to a maximum of eighty-nine on 4th September as migration got under way.

Ardea purpurea - Purple Heron

Up to four seen at Lake Langadas 26th to 29th August. On the latter date a flock of over five hundred were seen on passage at Old Kirinthos, on subsequent days numbers of migrants dropped until 4th September when a hundred and twenty-three passed down the coast.

Egretta garzetta - Little Egret

A maximum of thirteen at Lake Langadas, 29th August. The passage of egrets at Old Kirinthos coincided with the movement of herons and ibises, and more than a hundred egrets were seen on 2nd September.

Ardeola ralloides - Squacco Heron

A single bird at Lake Langadas, 28th and 29th August. Eight at Old Kirinthos on 31st August and 3rd September, and a flock of over thirty on 2nd September.

Nycticorax nycticorax - Night Heron.

One, Lake Langadas, 28th August. Seven to ten, Old Kirinthos, 31st August.

Ciconia ciconia - White Stork.

Adults were still feeding fledged young in nests in northern Greece as we travelled southwards on 18th July. On 6th August at Limn. we witnessed a magnificent floc..

of between a thousand and fifteen hundred of these birds on migration. We saw several empty nests at Farsala and Miloghousti on 25th August, and the only subsequent sight records are of single birds at Farsala and Lake Langadas, the latter on 26th August.

Platalea leucorodia - Spoonbill.

Two, Lake Langadas, 28th August. One, Old Kirinthos, 31st August.

Plegadis falcinellus - Glossy Ibis.

A hundred and sixty, 31st August; three, 1st September; fifty-two, 3rd September; sixty-seven, 4th September, and a single bird at Old Kirinthos, 5th September.

Anas platyrhynohos - Mallard.

All our records of duck except one are from the fresh-water lake at Langadas where the majority of fowl were mallard of which there were upwards of a thousand from 26th to 29th August.

Anas crecca - Teal.

A few pairs at Langadas, 26th to 29th August.

Anas querquedula - Garganey.

A couple on 27th August, and three on 29th August at Lake Langadas.

Anas penelope - Wigeon.

Thirteen flying down the coast at Old Kirinthos, 5th September.

Aythya ferina - Pochard

One male, Lake Langadas, 28th August.

Neophron percnopterus - Egyptian Vulture.

Widespread throughout the island and Greece. The largest flock was observed at Kozani where we saw nineteen on 25th August.

Gyps fulvus - Griffon Vulture.

Not so widely distributed as the Egyptian Vulture but occurs in large numbers, twenty five being the maximum, near Thebes.

Aegypius monachus - Black Vulture.

Our only record is of two birds soaring over the crag of Hyampeia at Delphi, on 22nd August with several griffons.

Gypaetus barbatus - Lammergeier.

We searched for three days for this distinguished bird at Delphi and we finally rewarded by the sight of a single bird flying close to our bus, near the slopes of Mount Kirphis on 24th August. A mountain guide told us that there was a pair of Lammergeiers resident in the area.

Aquilla chrysaetos - Golden Eagle.

Two immatures were seen on Kandhilion Oros on 27th July, and a single immature was present at Pilli on 10th August.

Hieraetus pennatus - Booted Eagle.

A single light phased adult was mobbed by a hooded crow at Lake Langadas, 27th August. One at Pharakla, 28th August.

Buteo buteo - Buzzard.

Numerous on the island particularly so near Strofilia and Achmetaga, where they often take chickens.

Buteo lagopus - Rough Legged Buzzard.

A rare winter visitor to Greece, but we have a record of one seen near Strofilia, 24th July. We are familiar with the bird and had excellent views of it which left no doubts as to it's identity.

Buteo rufinus - Long Legged Buzzard.

Two, Old Kirinthos, from 29th August until we left 3rd August.

Accipiter nisus - Sparrow Hawk.

We have several records of the species from the island but none from the mainland. It is possible that at Pharakla on 30th August, and two birds seen there the following day may have been A.brevipes (Levant Sparrow Hawk), but there records are not fully documented.

Accipiter gentillis - Goshawk.

One at Pharakla, 26th and 29th July; and one at Achmetaga, 18th August; two at Old Kirinthos, 29th August and one, 3rd September are the only records which we have from the island. Two at Delphi, 22nd August, and one at Dhomokos on 24th August are the records from the mainland.

Pernis apivorus - Honey Buzzard.

A pair at Pharakla, 6th August, and a single bird there 28th August.

Circus aeruginosus - Marsh Harrier.

One male which flew in from the sea at Pilli, early in the morning of 11th August was probably a migrant. An immature bird was present at Langadas on 27th and 28th August, and was seen feeding on a little gull or black tern. One, Old Kirinthos, 29th August.

Circus species

We have four records of immature or female harriers which could have been either C.cyaneus, C.macrourus or C.pygargus, but since it is difficult to separate them in the field we have been cautious and called them all Circus sp. One, Langadas, 27th August and three, Old Kirinthos, 3rd September.

Circaetus gallicus - Short-toed Eagle.

Not uncommon on the island, we have nine records from 29th July to 5th September. One, Delphi, 22nd August; one Langadas, 27th August.

Falco Subuteo - Hobby.

Less common than we expected, we have only four records of single birds as follows - Kekhrias, 24th July, Achmetaga, 9th August and Delphi, 23rd August, and a pair at Lake Langadas, 27th August.

Falco peregrinus - Peregrine.

One, Pharacla, 26th and 29th July. One chasing a flock of twenty Wood Sandpipers at about 3000ft. on the cliffs north of Kandhilion Oros. One, Old Kirinthos,

3rd September and two there the following day.

Falco biarmicus - Lanner Falcon.

Our only record is of one at Delphi on 22nd August.

Falco eleonorae - Eleonora's Falcon.

A pair over the Strofilia/Pharacla ridge most days between 18th and 24th August. Two at Old Kirinthos, 31st August and 2nd September.

Falco vespertinus - Red-footed Falcon.

Scarce. One on the roadside with lesser kestrels near Levadia on 21st and 24th August. The only bird seen on Euboea was seen at Old Kirinthos on 3rd September.

Falco Naumanni - Lesser Kestrel.

Numerous on the plains near Thebes and Farsala where it was not unusual to see up to sixty feeding on insects which were disturbed by the fires lit by the peasants while burning stubble. There was a largeroost near Farsala. Our only record from the island is of single birds at Old Kirinthos, 31st August and 3rd September.

It seems worth digressing from this report to put on record the large flocks of this species which we saw in Yugoslavia. On 17th July a large number were seen between Skopje and the Greek border, it was estimated that there were more than a thousand birds present. We were uncertain whether the birds were going to roost or were in fact migrant birds. E.E.Green passing through the same region on 16th August estimated up to 4000 birds there.

Falco tinnunculus - Kestrel.

Widespread throughout the island and mainland

Perdix perdix - Partridge.

A rare bird in Greece. We heard them calling at dusk and at sunrise at Kozani, and saw convoys of up to twenty birds at Langadas, 25th and 26th August.

Coturnix coturnix - Quail.

Heard calling day and night at Pharakla throughout our stay, and also at Langadas, 28th and 29th August. Five seen at Pharakla, 30th August.

Rallus aquaticus - Water Rail.

Two, Langadas, 28th August; heard at Old Kirinthos, 29th August.

Porzana porzana - Spotted Crake.

One at Old Kirinthos, 29th August.

Gallinula chloropus - Moorehen.

The only records are from Old Kirinthos, two 29th August, and single birds on 3rd and 4th August.

Fulica atra - Coot.

A flock of several hundred on Lake Langadas, 26th to 29th August.

Vanellus vanellus - Lapwing,

One at Lake Langadas, 26th August.

Charadruis hiaticula - Ringed Plover.

Up to ten at Langadas, 27th and 28th August.

Charadrius dubius - Little Ringed Plover

Parties of over twenty at Langadas, 28th to 29th August; several at Old Kirinthos, 29th August to 5th September.

Arenaria Interpres - Turnctone.

One, Old Kirinthos, 1st to 4th September.

Capella gallinago - Snipe.

A few at Langadas, and one record from the island at Old Kirinthos, 3rd September.

Numenius species.

One and five at Khronia on 4th and 5th August respectively were probably N. arquata. The birds were flying off shore in the Atlanta channel and specific identification was impossible. Since there is a possibility that birds may have been N. phaeopus or N. tenuirostris we have included these records under the generic name.

Numenius phaeopus - Whimbrel.

One or two present daily from 29th August to 4th September at Old Kirinthos.

Limosa limosa - Black-tailed Godwit.

Maximum twelve at Langadas, and seven at Old Kirinthos, 28th and 31st August.

Tringa ochropus - Green Sandpiper.

Small numbers on passage at Langadas and Old Kirinthos during last days of August and the beginning of September.

Tringa glareola - Wood Sandpiper.

A commoner species than the latter on passage, according to our records. E.E.G. saw a peregrine type swoop at a flock of twenty unsuccessfully, on top of the cliffs north of Kandhilion Oros. Twenty at Langadas, 26th August. Large flock of over a hundred at Old Kirinthos, 3rd September, and smaller numbers on preceeding and subsequent days.

Tringa hypoleucos - Common Sandpiper.

Small parties of up to eight seen from 6th to 31st August at Khronia, Pilli and Old Kirinthos. Heard at Langadas, 26th August.

Tringa totanus - Redshank.

Maximum twelve at Langadas, 29th August where small numbers passed through on migration from 26th August. A couple at Old Kirinthos, 29th August.

Tringa erythropus - Spotted Redshank.

Eight and two at Langadas on 26th and 28th August respectively. One at Old Kirinthos on 29th August.

Tringa nebularia - Greenshank.

Several records from Langadas, 26th to 29th August, two to four at Old Kirinthos, 29th August to 5th September.

Tringa Stagnatilis - Marsh Sandpiper.

All our records of this bird are outside the dates given by Lambert for autumn passage. One at Langadas, 27th and 28th August, and one Old Kirinthos, 31st August

Calidris minuta - Little Stint.

Three, Langadas, 27th August. Two, Old Kirinthos, 5th September.

Calidris temminckii - Temminck's Stint.

Three and fourteen, Langadas, 27th and 28th August.

Calidris alpina - Dunlin.

Heard calling on migration during hours of darkness at Langadas. One, Old Kirinthos, 4th September.

Calidris testacea - Curlew Sandpiper.

Two, Langadas, 27th August. One, Old Kirinthos, 4th September.

Philomachus pugnax - Ruff.

Three, Langadas, 27th August. Five, Old Kirinthos, 31st August and a single bird there on 3rd September.

Recurvirostra avosetta - Avocet.

A couple flying high over Lake Langadas, early in the morning, 28th August, are the only ones recorded.

Himantopus himantopus - Black-winged Stilt.

A small party of seven at Langadas, 26th August.

Glareola pratincola - Pratincole.

Two, Lamia, 24th August. Between forty and sixty at Langadas, where the presence of many immature birds suggested that the bird had had a successful breeding season, seen 26th to 29th August. It is unfortunate to record that the local 'sportsmen' shoot this beautiful bird. The mortality through shooting must be fairly high

since the bird's tameness and unsuspecting nature make it a very vulnerable target.

Stercorarius pomarinus - Pomarine Skua.

Whilst at Old Kirinthos, E.E.G. and C.S., saw what was probably a second summer bird of this species flying down the coast in a southerly direction. It was very close in shore and they had good views as it settled momentarily on the water within fifty yards of them. We can find no previous record of this species in Greece. 3rd September.

Larus fuscus - Lesser Black-backed Gull.

On 5th and 6th August at Khronia, five and two birds were seen flying northwards up the Atlanta Channel.

Larus argenatus - Herring Gull.

A few pairs at isolated places along the coast of Euboea during July and August. Maximum of twenty-two at Langadas, 29th August.

Larus audouinii - Audouin's Gull.

One, adult and an immature at Old Kirinthos, 29th August until 5th September.

Larus genei - Slender-billed Gull.

Six at Old Kirinthos, 31st August, single birds 1st and 3rd September.

Larus melanocephalus - Mediterranean Gull.

Up to three seen off Euboea at Chalkis, Nea Psara, Khronia and Limni between 19th July and 25th August.

Larus minutus - Little Gull.

Six at Limni, 25th August. Up to forty at Langadas,

26th to 29th August. Mainly immature birds, but there were a few adults as well.

Larus ridibundus - Black-headed Gull.

We have only two records of this bird both from Langadas, 26th to 29th August, two, an adult and an immature 26th August; and a flock of ten the following day.

Chlidonias niger - Black Tern.

A large flock of five hundred or more at Langadas, on the evening of 26th August had moved on by the following morning when we only saw fifty 'hawking' insects over a field of lucerne. Although we examined both flocks for C.leucopterus we failed to see any birds of this species. One, Old Kirinthos, 29th August.

Chlidonias hybrida - Whiskered Tern.

Two, Langadas, 28th August.

Gelochelidon nilotica - Gull-billed Tern.

One, Langadas, 27th August.

Hydroprogne caspia - Caspian Tern.

Three, Langadas, 27th to 29th August.

Sterno hirundoo - Common Tern.

Several immatures at Langadas, 28th August, and five adults there on 29th August.

Sterno albifrons - Little Tern.

A few, Langadas, 26th August.

Columba oenas - Stock Dove.

Forty, Old Kirinthos, 31st August, our only record.

Columba livia - Rock Dove.

Single birds at Delphi, 21st to 24th August. Six, Old Kirinthos, 1st September.

Streptopelia turtur - Turtle Dove.

Widespread throughout the island. The first signs of passage were on 20th August when a flock of thirty was seen at Pharacla, and six days later a large flock of forty birds was seen there.

Streptopelia decaocto - Collared Dove.

There were many in the National Gardens, at Athens, 14th August. We also saw a male and two females in a public park near the White Tower in Salonika on 29th August.

Cuculus canorus - Cuckoo.

One, Old Kirinthos, 31st August.

Athene noctua - Little Owl.

A few at Pharacla. One at Nea Psara, 13th August.

Strix aluco - Tawny Owl.

At least one pair at Pharacla. An immature bird which was brought to us by village children, in rather a sorry state due to bad handling was subsequently released after two days. It was only just fully fledged and was not long out of the nest.

Caprimulgus europaeus - Nightjar.

A very common bird on the island. It was one of the interesting experiences to walk down the track from

K-tounio to Achmetaga at dusk, and to see the nightjars 'dusting' on the path. One night as we came down the track at 03.00hrs. when there was no moon we were able, with the aid of an electric torch to catch one by hand. Although we tried again on other evenings we were unsuccessful, due to the moonlight no doubt. We also found a dead nightjar on the road near Kekhrias, which had presumably been killed whilst sitting on the road at night. We have only one record from the mainland, a single bird at Langadas, 28th August.

Apus apus - Swift.

One of the most interesting features of a visit to the top of a mountain on the island was the sight of the swifts common-, alpine- and pallid-, all flying over the cols in small numbers. The largest flock was over forty common swifts over the Strofilia track at Pharacla on 24th July. Largest flocks were seen up to mid August after which numbers declined. Our latest records being one at Langadas, 28th August and two, Old Kirinthos, 4th September.

Apus pallidus - Pallid Swift.

Small numbers seen at Chalkis, Kekhrias, Limni and on Kandhilion. Most birds seen late July. Last seen at Pharacla, 25th August. Small numbers breed at Limni, where we handled two almost fully fledged nestlings which had been taken from a nezt in the town, 24th July.

Apus melba - Alpine Swift.

As common as A.apus throughout the island. Peak passage occuring from 17th to 20th August, when a flock of over a hundred was seen on the 17th at Achmetaga. A smaller peak occured at the beginning of September when the largest number was a flock of fifty at Old Kirinthos.

Alcedo atthis - Kingfisher.

One, at the coast at Khronia, 6th August. Two at Old Kirinthos 29th August and 1st September; one there, 3rd September. We saw none in the river valleys where the waterccurses had all dried out.

Merops apiaster - Bee-eater.

Up to ten flying high over Katounia, 17th August. Six at Elasson 25th August. Fifty flying in a northerly direction atPharacla, 27th August, and seventy there on 2nd September.

Coracias garrulus - Roller.

Seen on passage on the mainland from 17th August. As we travelled slowly up the country from Levadia to Salonika, from 24th August to the 26th we saw small numbers on the telegraph wires alongside the road. Maximum of five together at Dhrepanon and Langadas on 26th August. The only records from the island are of single birds at Strofilia and Old Kirinthos, 29th August to 1st September.

Upupa epops - Hoopoe.

Small numbers of birds on passage appeared on the

island from 18th August, and continued until 29th August. On the mainland we saw small numbers on passage from 21st. The maximum being eight at Langadas, 26th August.

Dendrocopus medius - Middle-spotted Woodpecker.

Two in plane trees near Old Kirinthos, 31st August.

Jynx Torquilla - Wryneck.

One surprisingly enough was seen about 3000 ft. above sea level, on the stony plateau near the Corycian Grotto, at Delphi. There were very few trees at this height, but we saw this bird in the only fruit tree in sight.

Melanocoypha calandra - Calandra Lark.

One on the roadside south of Chalkis, 31st July.

Calandrella brachydactylla - Short-toed Lark.

A small party of over eighteen at Langadas, 29th August; and three at Pharacla, 2nd September.

Galerida cristata - Crested Lark.

Abundant throughout the island and the mainland.

Lullula arborea - Wood Lark.

Small flocks of up to ten at Pharacla, and smaller numbers on the landward side of the sea cliffs between Kandhilion Oros and Limni.

Alauda arvensis - Skylark.

Two records only of this species. One on the plain of Marathon, 31st July, and one at Pharacla, 19th August.

Hirundo rustiga - Swallow.

Abundant. Breeds at Achmetaga and Pharacla. Two

hundred resting on telegraph wires on the coast near Chalkis, early in the morning looked to be arrivals from the north. A large passage movement was taking place on the mainland on 24th August when we saw several flocks of over a hundred birds on the wires. The largest single flock being four hundred birds on the wires, near Lariasa, 25th August.

Hirundo daurica - Red-rumped Swallow.

Widespread. Adults feeding young at Farakla, 25th July. Both this species and H.rustica spent the hottest hours of the day resting on the joists of a barn above the resin pit at Farakla; or, amidst the shady branches of the pear trees on the outskirts of the village.

Delichon urbica - House Martin.

Only two records of this species. Three or four at Achmetaga were on passage, 17th August. Fifty, Salonika, 26th August.

Riparia riparia - Sand Martin.

An extremely large flock of well over a thousand birds was seen at Langadas, 26th August. This number gradually decreased until 29th August when there were less than half the original number present.

Ptyonoprogne rupestris - Crag Martin

Believed to be breeding with Hirundo daurica on the sea cliffs near Pilli, where we saw about ten pairs, 10th August. Up to twelve seen at Delphi, 22nd August. One, Kirinthos, 3rd September.

Oriolus oriolus - Golden Oriole.

Passage began on 20th August when we saw one male and three females or immatures at Pharacla. Single birds were also observed there on 20th, 25th and 30th August. Three females or immatures at Langadas, 27th August.

Corvus corax - Raven.

Common on the island and mainland. There was a roost of upwards of eleven birds in an olive grove between Pharacla and Strofilia.

Corvus cornix - Hooded Crow.

Abundant throughout the country where it is looked upon as a pest. Forty, Achmetaga, 9th August. Five hundred to a thousand at Langadas, 27th August.

Corvus monedula - Jackdaw.

More local than the foregoing two species. Twenty at Achmetaga, 18th August. Over a hundred picking insects off the backs of water buffalo at Langadas.

Pica pica - Magpie.

None seen on the island but the bird is numerous on the mainland. Hundreds flying into a roost near Kozani.

Garrulus glandarius - Jay.

An immature on the slopes of Kandhilion Oros, 27th July. Six to eight Spathart, 30th July. Two, Achmetaga, 9th August. Six, Limni, 25th August.

Parus major - Great Tit.

Very common at Pharacla.

Parus caeruleus - Blue Tit.

Common at Pharakla where small mixed flocks of tits and chaffinchs were seen in the pine woods during July and August.

Parus ater - Coal Tit.

A few at Pharakla and Pilli.

Parus lugubris - Sombre Tit.

An adult and immatures at Achmetaga, 8th August. One also 18th August. Several at Delphi, 22nd and 23rd August, one at Pharakla, 2nd September.

Aegithalos caudatus - Long-tailed Tit.

A party of ten, Achmetaga, 9th August. Small parties at Achmetaga, a maximum of twenty, 27th August.

Panurus biarmicus - Bearded Tit.

Heard at Old Kirinthos, 29th August and 1st September.

Sitta neumayer - Rock Nuthatch.

Two on Kandhilion Oros, 27th July. One or two Pilli, 11th August. Common at Delphi where the air echoed with their shrill calls in the early morning. Also seen at Old Kirinthos, 29th August and 1st September.

Certhia brachydactyla - Short-toed Tree-creeper.

Widespread at Pharakla in the pine woods.

Troglodytes troglodytes - Wren.

One, Old Pharakla, 27th July.

Turdus merula - Blackbird.

Common on the island especially at Katounia.

Monticola saxatilis - Rock Thrush.

A pair on Kandhilion Oros, 23rd July. A female or immature at Delphi, 22nd August.

Monticola solitarius - Blue Rock Thrush.

Up to six seen at Pilli, five at Delphi, 22nd August, two, Old Kirinthos, 1st and 3rd September.

Oenanthe oenanthe - Wheatear.

Abundant.

Oenanthe hispanica - Black-eared Wheatear.

One juvenile, Pharacla, 23rd July. One, Kekhrias, 24th July. Common at Delphi, 22nd to 24th August. Three, Pharacla, 19th August. Also seen at Old Kirinthos.

Saxicola torquata - Stonechat

Two, Delphi, 22nd August, on the plateau near the Corycian Grotto.

Saxicola rubetra - Whinchat.

One female, Dhrepanon, 26th August. An immature, Langadas, 27th August.

Phoenicurus phoenicurus - Redstart.

Pair, Pharacla, 20th August, one male, 27th and 28th August. A female at Delphi, 22nd August.

Luscinia megarmynchos - Nightingale.

Large passage of this species at Achmetaga, 18th August and at Pharacla, 20th August. E.E.G. thinks that there were possibly some thrush nightingales (L.luscinia) amongst them, but our evidence is incomplete. Lambert

no mention of this species.

Cettia cetti - Cetti's Warbler.

One, Old Kirinthos, 2nd and 3rd September.

Lusciniola melanopogon - Moustached Warbler.

Two, Langadas, 29th August.

Acrocephalus arundinaceus - Great Reed Warbler.

Present at Old Kirinthos, 29th August.

Acrocephalus scirpaceus - Reed Warbler.

Two, Langadas, 28th August.

Hippolais icterina - Icterine Warbler.

Two, Achmetaga, 18th August. One, Pharacla, 19th and 20th August.

Hippolais pallida - Olivaceous Warbler.

Four upwards, Pilli, 11th August. Two, Achmetaga, 18th August. Several at Old Pharacla, 19th August.

Hippolais olivetorum - Olive-tree Warbler.

Three, Pharacla, 19th August. One, Dhomokos, 24th August. One, Pharacla, 2nd September.

Sylvia atricapilla - Blackcap.

A male, Achmetaga, 18th August. Also seen Pharacla, 20th August.

Sylvia nisoria - Barred Warbler.

An immature at Old Kirinthos, 5th September.

Sylvia communis - Whitethroat.

Two, Pharacla, 9th and 18th August. One, Pharacla, 20th August and 2nd September.

Sylvia ruppelli - Ruppell's Warbler.

One male Paracla, 19th August. One female, Delphi, 22nd August.

Sylvia melanocephala - Sardinian Warbler.

Abundent resident on the island. Common also at Delphi.

Sylvia cantillans - Sub-alpine Warbler.

One, Pilli, 11th August. Several, Paracla, 19th and 20th August.

Agrobates galactotes - Brown-backed (Rufous) Warbler.

First appeared on passage 8th August and small numbers seen daily at Achmetaga and Pilli until 12th August.

Cisticola juncidis - Fan-tailed Warbler.

Two, Old Kirinthos, 4th September.

Phylloscopos trochilus - Willow Warbler.

Small numbers on passage from 20th August.

Phylloscopus collybita - Chiffchaff.

Several, Old Kirinthos, 1st September.

Phylloscopus bonelli - Bonelli's Warbler.

One at Paracla, 28th August. Six there, 2nd September.

Musuicapa striata - Spotted Flycatcher.

Fairly common around Paracla.

Anthus campestris - Tawny Pipit.

One immature, Roviais, 5th August. Five to seven, 20th August, and one, 2nd September at Paracla. Three, 22nd, and one 23rd August at Delphi. Four, Langadas,

[illegible] August. The Field Guide gives the leg colouring of this species as being yellowish, but all the birds we saw had pinkish legs.

Anthus trivialis - Tree Pipit.

One, Pharakla, 20th July and two, 19th August.

Motacilla alba - White Wagtail.

Two near Levadia, 21st August. One seen between Chalkis and Pharakla, 30th August.

Motacilla cinerea - Grey wagtail.

Two, Kekhrias, 24th July. Two, Strofilia, 21st August and 2nd September. Three, Achmetaga, 21st August.

Motacilla flava - Yellow Wagtail.

Several at Delphi, 22nd and 23rd August. At Lake Langadas we saw a thousand on 26th August. The following day they were all spending the siesta in a field of lucerne. In the evening when the herds of sheep and water buffalo were driven down to the lake's edge to drink we estimated 5000 yellow wagtail types accompanying them, feeding on the numerous insects which the cattle disturbed. It was a memorable sight since in addition to the clouds of wagtails feeding on the insects were many sand martins. The air was thick with birds. Although the majority of birds resembled the so called Blue-headed Wagtail it was interesting to see so many variations in plumage of the females and immatures, and to think how so many ornithologists at home glibly assign birds showing some insignificant

variation in England to one race or another. Some of them would have found it very difficult in this flock where it was difficult to find two birds alike, some even looked as sandy as tawny pipits.

Lanius excubitor - Great Grey Shrike.

An adult at Pharacla, 19th August, an almost certain immature at Old Kirinthos, 2nd September.

Lanius minor - Lesser Grey Shrike.

Another species which took a major part in the migration which came with a rush on 17th August. A maximum of eleven at Pharacla, 20th August. We counted seventy-two on the telegraph wires between Farsala and Larissa on the morning of the 24th August, when we also noticed large numbers of Lesser Kestrels and a few Rollers. This rush of shrikes had died down somewhat by the end of the month when a few were still to be seen on the island.

Lanius senator - Woodchat Shrike.

Widespread throughout suitable localities on the island where we saw adults feeding young up to 27th August. Not as numerous on migration as the lesser grey shrike, although bulk of the migrants appeared at the same time.

Lanius collurio - Red-backed Shrike.

Single birds were seen at Achmetaga on 9th August and at Pilli on the 11th, but as with other shrikes which arrived on Euboea it was the 17th which really heralded

their arrival. Slightly more numerous than the wood-chat but not as numerous as the lesser grey. Two birds were released from a tree covered with a type of bird lime at Mandoudhion on 30th August.

Sturnus vulgaris - Starling.

Six, Langadas, 26th August and over a hundred resting in an accacia tree during siesta time, 27th August. They were calling in the same manner as birds going to roost at night in Trafalgar Square. As soon as it became cooler they foresook their mid-day roost.

Sturnus roseus - Rose-coloured Starling.

An immature in a cage in a garage at Salonika may have been taken locally. A flock of ten seen from the train between Salonika and Idomeni, 8th September.

Chloris chloris - Greenfinch.

A few atPharacla and Achmetaga.

Carduelis carduelis - Goldfinch.

The commonest bird on the island where we saw flocks of up to sixty at Achmetaga.

Carduelis cannabina - Linnet.

Our only record is of twenty on the plateau at Delphi, 22nd August.

Serinus canarius - Serin.

Up to seven atPharacla, 16th to 20th August. Also seen in the pine trees about the stadium at Delphi, 22nd August.

Loxia curvirostra - Crossbill.

Small parties not exceeding eight birds were seen at Achmetaga, Pharacla and Delphi, between 18th August and 2nd September.

Fringilla coelebs - Chaffinch.

Very common on the island.

Emberiza calandra - Corn Bunting.

Ten, Dhrepanon, 26th August. Two, Old Kirinthos, 29th to 3rd September.

Emberiza melanocephala - Black-headed Bunting.

Up to five at Pharacla, 19th and 20th August, and 2nd September.

Emberiza cirlus - Cirl Bunting.

Very common in the pine woods on the fringe of cultivated land around Pharacla and Achmetaga. A male was seen carrying food near Kekhrias 24th July, and at Pilli, 11th August. Often associates in flocks with black-headed buntings and ortolans. Maximum, sixteen at Pharacla 2nd September.

Emberiza hortulana - Ortolan Bunting.

Several with cirl buntings at Pharacla, 19th August. Two there on 30th August, and an adult with an immature on 2nd September.

Emberiza Caesia - Cretzschmar's Bunting.

Two, Pharacla, 19th; one male, 20th August and 2nd September. A male at Delphi, 22nd August.

Emberiza Schoeniclus - Reed Bunting.

Two immatures at Langadas, 27th August.

Passer Domesticus - House Sparrow.

Common.

Passer hispaniolensis - Spanish Sparrow.

A male at Elasson, 25th August. One at Old Kirinthos, 3rd September.

Summary.

During our short visit to Greece we attempted to visit many differing habitats in order to get a satisfactory picture of its birds. We were unable to choose the time of our visit to Greece and July is not to be recommended unless one can also include August and part of September. Our disappointment at the lack of bird life during July was amply compensated for by the surge of migrating birds which hit the island about the 18th August. Most of our interesting records come from Lake Langadas and Old Kirinthos where there was water during the hottest months. It is interesting to surmise what we might have seen if we had discovered these places during July; and if we could have stayed there for a longer period.

At first we experienced a certain amount of difficulty with regard to the warblers, but this was soon resolved; however, we do advocate that future visitors to Greece should look out for the Thrush Nightingale on passage.

Difficulties were also encountered with some of the larger raptores. These difficulties were never completely overcome and certain data regarding these species has been omitted in order to present a true report.

One hundred and seventy-five species have been recorded in this report.

The highlights of the visit were the discovery of a Pomarine Skua which species had not previously been recorded for Greece; and of course the breeding of the Pallid Swift at Limni. We shall also need to go a long way to have such a magnificent view of a Lammergier as we had near Arachover.

Bibliography.

LAMBERT, A, A Specific Check List of the Birds of Greece. Ibis, 1957 pp.43-68.

MOUNTFORT, G. Portrait of a Wilderness. London 1958.

PETERSON, MOUNTFORT & HOLLOM. A Field Guide to the Birds of Britain and Western Europe, 1954, London.

WITHERBY et al. The Handbook of British Birds.