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## Summary of the Discussion

E. J. H. Corner

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## Summary of the Discussion

By E. J. H. CORNER, F.R.S.

Before I attempt a summary and lose myself in the maze of thought that has grown up in the last three days I want to make clear five points. First, I repeat our gratitude to the Royal Society for this opportunity to re-assemble after having entrusted us with so great an expedition. The consequences are, I fear, inevitable. The Society has opened the gate into a new field. We have explored and we must go back. Then, I would like to thank wives for having allowed us this freedom, in the hope that it will be permitted again. Thirdly, I would like the story of the expedition, the results of this discussion, and our proposals to be conveyed to the Government of the British Solomon Islands Protectorate and to the Solomon Islanders. Next, on behalf of the botanists, I would like to convey through Mr Brenan our great appreciation of the work of his staff in the Herbarium of the Royal Botanic Gardens at Kew in the identification of our collections in time for this meeting. Lastly, I speak for the whole expedition when I recall how much we owed during the preliminary organization in 1964 and in the field-administration in 1965, and how much we owe now for the preparation for this meeting to George Hemmen... [further remarks lost in applause].

Whatever we expected to find and accomplish in the Solomons, we met the unexpected and learned. Rain and sea could be frustrating. Scenery could be wild and majestic, tranquil and alarming. Our last, unforetold fortnight in Malaita was delightful; we met fine weather when it should have rained. We have gathered so much information that, when it is published, the Solomons will become one of the better known groups of tropical Pacific islands. The instance of *Collembola* has been given to us. Taxonomists realize what all tropical biology requires for direction, and that is monographic revision. We studied plants and animals in the middle or at the beginning or the end of a range of distribution which may be small or as large as the tropical Pacific, if not most of the tropics, but in most cases we do not know the direction of this ranging. When the variation consists merely of detail in ultimate evolution, it will be difficult to construe but when, as in *Ficus*, there has been the making of trees in the Solomons, it is clear that they have been a centre of major evolution as well as a cul-de-sac.

Yet this knowledge that we have gathered leads to conflict. The geological background, presented to us through Dr Allum, has been invaluable but neither the botany nor the coral reefs, so unexpectedly dead, seem to fit the geological dating. It is a pity that we had to forego the visit to the south-east corner of San Cristobal, where Dr Allum found evidence of island growth, and that we did not have time to appreciate in the first exploit to Gallego the latest addition to Guadalcanal. Such are the new spurs that this discussion has provided.

There is not only the problem of the dead reefs on the precipitous shores but, as Dr Stoddart also pointed out, the lack of extensively growing shores; the Indo-Pacific strand flora is in consequence narrowly confined. By contrast, Professor Morton and his

colleagues found these dead reef-flats replete with invertebrate life exploiting and re-exploiting, as it were, the dead cities of the past. He has opened up a new arena for marine invertebrate zoology. Dr Womersley, nevertheless, found no lack of reef-building by what we used to call nullipores, but to which we must now refer as *Porolithon* and *Neogoniolithon*. Dr Wolff's account of Rennell Island, which the Expedition did not visit, gave us yet another aspect of the astonishing possibilities of mountain forming under old Tertiary systems of reef-building. As Dr Stoddart pointed out, the great lake of Rennell presents problems of the alteration in sea level during the Pleistocene, and the study of Rennell will have to be renewed.

There came, of course, the conflict between botanists and zoologists on the origin of island-life. It can be set forth *in extremis*, such is the way of the Solomons, by the conclusion of Dr Lee that the earthworms had probably been introduced by man, and my own conclusion that the occurrence of *Ficus* in the Solomons required extensive land-bridges, whether through archipelagoes or as a continuous connexion with the Melanesian foreland, and the inference that these bridges would have been used by animals. Professor Good, in his concise summary of the botanical affinities of the islands, drew attention to the tetrahedron-theory, discarded but not to be discountenanced. Doubtless many conceits have been entertained that the Solomons would add little to the generality of scientific theory, but the facts as we unearthed them will not fit. The very high endemism of palms in New Caledonia has been known, but we have now Professor Moore's account of the even higher endemism of palms of a different sort in the Solomons. The islands cannot be dismissed as a cul-de-sac, though many of us have begun to feel that the widespread homogeneous forest of impoverished Malaysian affinity, which characterizes the Solomons, is an adaptation to their rain-sodden terrain. That may well be the botanical answer to the question of environmental saturation which Dr Greenslade and Mr Peake raised.

Professor Cain introduced two points, one emphasizing the difference between animal and plant diversification, and the other reflecting on the past history of the islands. Immigrant birds, if not other animals, tend to differentiate into montane species that can enjoy the nebulous gloom and the lowland that need the clear dawn. On the whole, plants do not do this, though the Cunoniaceous *Schizomeria serrata* Hochr. may be an example. Botanists see two floras in the islands, the lowland and the montane which begins at about 1000 m alt. and implies other problems than Malaysian generality. Professor Cain explained how the lowering of temperature and a change of wind-belt in the pluvial period could have brought this montane limit, which now breaks this forest into a set of islands above the lowland canopy, down to a level when it would itself have extended with little interruption: it too could have advanced by archipelagoes or land-bridge. Certainly it is difficult to see how, otherwise, the quite large-fruited montane palm *Clinostigma* of Popomanaseu could have got to its present altitude (1500 to 1800 m). I realize now, unfortunately, that we should have given even more time to the collection of palms than we were able to spare. A second new species of *Clinostigma*, which was the only common palm on the ultrabasic soil of San Jorge Island other than *Gulubia hombronii* Becc., we collected almost by chance. Nevertheless, most of the flowering plants of the Solomons can now be identified and, in relation to climate, soil and altitude, they provide hundreds of autecological research problems, not the least being their ability to turn exceptionally poor soil into valuable

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protoplasm. While we were discussing Cain's hypothesis of the montane forest, I found myself thinking of the association of seashore trees that we encountered in the hillside forest at an altitude or *ca.* 300 m in Santa Isabel and Malaita, yet the indicator of these apparently relict patches of coastal forest was the large tree *Parartocarpus venenosus* Zoll. et Mor. which is not a sea-shore or a montane tree. I think the relative simplicity of the lowland forest in the Solomons, which can largely be got into the head, renders them more suitable than the luxuriant Malaysian forests for ecological study.

The Solomons, far away and untouched by industrialism, offer most intriguing problems for the biologists. We have tasted and would like to return though, I expect, in smaller units than this large expedition, but we want to pursue these problems of dispersal, speciation, phyletic evolution, and the sheer mechanics of existence before the onslaught of man obliterates them. I close with the warning which Dr Allum raised at first about the uncertainty of place names. The islands are just emerging from pre-history; they are not standardized; this novelty is their appeal.

## APPENDIX 1. Personnel of the expedition

1. *Land party*

Mr E. J. H. Corner (Leader)	June–Dec.	flowering plants, fungi	Cambridge University
Dr A. F. Braithwaite	June–Dec.	ferns, bryophytes	Leeds University
Mr J. A. Grant	June–Dec.	heteroptera, insects	British Museum (Nat. Hist.)
Mr G. E. Hemmen	June–Dec.	organization, cinematography	Royal Society
Mr D. J. Hill	June–Dec.	lichens	Sheffield University
Mr P. F. Hunt	June–Dec.	orchids, flowering plants	Royal Botanic Gardens, Kew
Mr P. N. Lawrence	June–Dec.	collembola: soil animals	British Museum (Nat. Hist.)
Dr K. E. Lee	June–Oct.	soils, earthworms	CSIRO, Adelaide
Mr J. F. Peake	June–Dec.	mollusca	British Museum (Nat. Hist.)
Dr T. C. Whitmore	June–Sept.	flowering plants	Forest Research Institute, Malaya (lately Forestry Department, BSIP)

2. *Marine party*

Professor J. E. Morton (Leader)	June–Nov.	mollusca, crustacea	Auckland University
Mr A. Bailey	June–Nov.	seaweeds	Adelaide University
Mr D. A. Challis	June–Nov.	assistant to Professor Morton	Auckland University
Dr R. K. Dell	Oct.–Nov.	mollusca	Dominion Museum, Wellington
Mr P. E. Gibbs	June–Dec.	polychaetes, echinoderms	Queen Mary College, London University
Dr M. C. Miller	Aug.–Oct.	mollusca, hydrozoa, polyzoa	Auckland University
Dr D. R. Stoddart	June–Nov.	shore geography	Cambridge University
Dr H. G. Vevers	June–Sept.	echinoderms	Zoological Society of London
Dr S. A. Wainwright	June–Sept.	corals	Duke University, N. Carolina, U.S.A.
Dr H. B. S. Womersley	Aug.–Sept.	seaweeds	Adelaide University

3. *Visitors*

Mr G. F. C. Dennis, Forestry Department	Gallego, San Cristobal
Dr P. J. M. Greenslade, Department of Agriculture	San Cristobal
Mr B. Leach, Department of Agriculture	Santa Isabel

4. *A. K. Maroro*

Captain S. B. Brown	master	Sevanaia Bainimarama	cadet
Jo Aisea	mate	Tomasi Toganivalu	cadet
Etei Kauba	steward	Salesi Yalodole	cadet
Aram Mote	cook	Josefa Ratabua	cadet
Josaia Lum On	engineer	Jese Durn	cadet

5. *Assistants, Honiara*

Francis Kakaihe	Geological Department	Ezekiel	Department of Agriculture
Samuel Iko	Geological Department	Isaiah	Department of Agriculture
Raymond Mauriasi	Forestry Department	Jack	Forestry, tree climber
Petero Naturaga	Department of Agriculture	Saelae	Forestry, tree climber

## APPENDIX

6. *Schoolboys*

Barnabas Boossae (San Cristobal)	All Hallows School, Ugi
George Amo (San Cristobal)	All Hallows School, Ugi
Henry P. Raraka (South Nggela)	All Hallows School, Ugi
Mark Legata (Santa Isabel)	All Hallows School, Ugi
Alfred Handovi (Guadalcanal)	King George VI School, Auki
George Kechoa (Guadalcanal)	King George VI School, Auki
Martin Nolihenue (Small Malaita)	King George VI School, Auki
Wilson Ifanoa (Small Malaita)	King George VI School, Auki

7. *Land party, permanent porters*

Paul Kekesaia	Pateresio Verakonina	Pio Vunua
Silas Limahando	Ruru Ruben	Alec Korae
Tome Kania	Embi	Basili Kuchi
John Eros	Suilua Ngelea	Edwin
Tanasio Seroa	John Rini	

8. *Marine party, Solomon Islands Assistants*

Ini Muna	chief shore assistant (Tikopia)	Koete	(Nggela)
Mostyn	(Tikopia)	Stanley	(Guadalcanal)
E. D. Etuini	(New Georgia)	Harry	(Guadalcanal)
Joel	(Tikopia)	Tahua	(Rennell Island)
Billy	(Nggela)		

## APPENDIX 2. Itinerary of the Expedition

	land party		marine party
20–30 June	Honiara	20–30 June	Honiara
1–14 July	Mt Gallego, Guadalcanal	2–15 July	Tetel Is., Florida Group
14–15 July	Honiara	15–21 July	Honiara and Komimbo Bay, Guadalcanal
16 July–14 Aug.	San Cristobal	22–29 July 2–9 Aug.	Tetel Is. Marovo Lagoon, New Georgia
14–18 Aug.	Honiara	10–15 Aug.	Honiara
19 Aug.–12 Sept.	Kolombangara	16–24 Aug. 26–30 Aug. 31 Aug.–1 Sept.	Komimbo Bay Marovo Lagoon Banika Is., Russell Group
		3–4 Sept.	Wickham Is., New Georgia
		4–7 Sept.	Gizo
13–18 Sept.	Honiara	9–14 Sept.	Honiara
19 Sept.–8 Oct.	Santa Isabel	16 Sept.–11 Oct.	Marau Sound, Guadalcanal
9–13 Oct.	Honiara	11–13 Oct.	Honiara
14 Oct.–15 Nov.	Popomanaseu, Guadalcanal	14 Oct.–18 Nov. 17–26 Oct.	Marovo Lagoon Banika Is.
15–17 Nov.	Honiara		
18 Nov.–3 Dec.	Malaita		
4–15 Dec.	Honiara		

## APPENDIX 3. Temperature records taken by the Land Party

BY E. J. H. CORNER, F.R.S.

The following minimum (6 a.m.) and maximum records, in Centigrade, were taken in the forest shade at the various camps of the Expedition 1965. The minimum varied commonly 18–23 °C (64–73 °F) and the maximum 26–30 °C (79–86 °F). The lowest record was at the upper camp on Popomanaseu on 27 Oct. with 11.7 °C (52.5 °F), but it was surely colder on 5 Nov. when the temperature at Nuhu dropped to the remarkably low figure of 13.5 °C (56 °F). The maximum occurred in the rather open camp-site at Kolombangara on 30 Aug. with 33.0 °C (91.5 °F).

1. *Mt Gallego, Guadalcanal*

(a) Hidden Valley camp, 300 m			(b) Umasani base camp		
July 7,	20.0,	—	July 10,	—	27.5
8,	18.0,	26.0	11,	17.5,	25.0
9,	18.5,	26.5	12,	17.0,	24.0
10,	18.5,	—	13,	17.5,	—

2. *San Cristobal*

(a) Naripato village, 250 m			(b) Warahito camp (low level)		
July 20, 20.5, —			July 28,	22.7,	25.0
July 20,	20.5,	—	29,	22.0,	26.7
(b) Warahito camp (low level)			30,	22.7,	—
July 20,	—	30.5	31,	—	25.5
21,	22.5,	29.5	Aug. 1,	21.7,	30.7
22,	22.7,	27.0	2,	21.7,	29.5
23,	22.0,	—	3,	22.0,	28.0
24,	23.0,	29.0	4,	22.0,	—
25,	22.5,	—	5,	(thermometers broken)	
26,	22.7,	28.5			
27,	22.7,	26.5			

3. *Kolombangara*

(a) Base camp (sea level)			(b) Upper camp, 800 m		
Aug. 23,	23.2,	27.3	Sept. 1,	—	23.7
24,	23.3,	26.5	2,	19.0,	24.8
25,	22.5,	25.2	3,	20.0,	27.0
26,	22.5,	27.0	4,	19.5,	24.0
27,	22.7,	29.5	5,	19.0,	24.2
28,	22.5,	27.0	6,	19.5,	24.2
29,	22.7,	31.5	7,	19.5,	23.0
30,	22.5,	33.0	8,	19.5,	—

4. *Popomanaseu, Guadalcanal*

(a) Nuhu, 300 m			(b) Tambalusu, 500 m		
Oct. 16,	21.0,	29.0	Nov. 5,	13.5,	—
17,	22.0,	—	6,	14.0,	—
18,	20.0,	—	7,	16.0,	—
(b) Tambalusu, 500 m			Nov. 2,	18.8,	—
Oct. 19,	18.0,	—	3,	19.0,	—
20,	17.0,	—	4,	20.0,	—
21,	18.0,	—			

## APPENDIX

APPENDIX 3. (*cont.*)*(c)* Vungavalekama, 1400 m

Oct. 21,	—	15.0 (sunset)	Oct. 30,	16.0,	21.2
22,	13.5,	—	31,	16.0,	19.5
28,	—	19.7	Nov. 1,	15.5,	—
29,	15.0,	19.0			

*(d)* Vurakirapa, upper camp, 1800 m

Oct. 22,	—	23.0	Oct. 26,	14.0,	17.0
23,	12.8,	20.0	27,	11.7,	17.5
24,	14.5,	20.0	28,	12.8,	—
25,	14.0,	17.0			