

Aerobiological Investigations

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ABSTRACT

During the Third Indian Scientific Expedition to Antarctica a few air samples for aerobiological investigations were collected between March 5th and 13th 1984 using a Tilak's Continuous Air Sampler for studying the microparticles of biotic origin distributed in the air over the southern ocean. The results of these investigations are given in this paper.

During the Third Indian Expedition to Antarctica a few air samples for aerobiological investigations were collected using a Tilak's Continuous Air Sampler from between 67°23 S, 20°39 E and 42°00 S, 49°56 E. India is the first country in the world to conduct such type of experiments over Antarctica. The sampling was aimed at studying the microparticles of biotic origin distributed in the air over the southern ocean. A total of eight samples were collected between 5th & 13th March 1984. The samples obtained on slides were mounted with glycerine jelly and were observed under a binocular microscope for qualitative and quantitative analysis of air spora components. Eventhough the investigation was of short duration the microscopical examination provided interesting results. The results of the study are presented in table 1.

The air spora components consisted of 11 spore types (fungal and pollen) and three other types which included pollen grains hyphal fragments and insect parts. The pollen grains had dominated over the air spora with 51.5% followed by *Aspergillus* a fungal spore type (which contributed 28.81%) be longing to the group Fungi imperfecti which is an allergenic spore type. However all the *Aspergillus* were obtained at a single station.

Among the spores *Nigrospora* was the relatively common spore type and it contributed 9.79%. All other spore types and other forms were only meagrely represented and their percentages ranged between 0.28 and 2.80.

Out of the 14 components seven occurred only once while two occurred twice and the rest more than twice. The particles which occurred at 50% of the stations were *Nigrospora* smut spore and pollen.

Most of the components were obtained from the southern latitudes of study. Those which either dominated or rather exclusively taken from the southern half of the area under investigation included *Memnoniella* (2/2) *Nigrospora* (33/34) *Periconia* (2/2) *Pestalotiopsis* (1/1) rust spore (1/1) smut spore (8/10) pollen (179/179) hyphal fragments (7/7) and insect parts (2/2). All others were taken exclusively from the northern part of the area studied.

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TABLE 1

The day to day variation in the concentration of the Spores and then percentage contributes to the total An spora from
5th March 1984 to **13th March 1984

*5th March - lat 67° 23 S long 20° 39 E ** 13th March - lat 42° 00 S long 49° 56 E

Sr No	Spore type	5/6			6/7			7/8			8/9			9/10			10/11			11/12			12/13			Individual spore types total concentration	Percentage contribution
		Mar Slide Nos 1&2	Mar Slide Nos 3&4	Mar Slide Nos 5&6	Mar Slide Nos 7&8	Mar Slide Nos 5&6	Mar Slide Nos 7&8	Mar Slide Nos 9&10	Mar Slide Nos 11&12	Mar Slide Nos 13&14	Mar Slide Nos 15&16	Mar Slide Nos 17&18	Mar Slide Nos 19&20	Mar Slide Nos 21&22	Mar Slide Nos 23&24	Mar Slide Nos 25&26	Mar Slide Nos 27&28	Mar Slide Nos 29&30	Mar Slide Nos 31&32	Mar Slide Nos 33&34	Mar Slide Nos 35&36	Mar Slide Nos 37&38	Mar Slide Nos 39&40				
1	<i>Aspergillus</i>																							100	28 81		
2	<i>Cladosporium</i>																							2	0 5		
3	<i>Curvularia</i>	1																						2	0 5		
4	<i>Didymosphaeria</i>																							1	0 28		
5	<i>Memnoniella</i>	2																						2	0 5		
6	<i>Nigrospora</i>	3	25																					34	9 79		
7	<i>Papularia</i>																							1	0 28		
8	<i>Periconia</i>																							5	1 4		
9	<i>Pestalotiopsis</i>	1																						1	0 28		
10	<i>rust spore</i>																							1	0 28		
11	<i>smut spore</i>	6																						10	2 8		
	other parts																										
12	pollen	50	5	27	97																			179	51 5		
13	hypahi fragment	5	2																					7	2 01		
14	insect parts		1		1																			2	0 5		
Total concentration (Daily)		68	33	28	105	5	1	104	2	347																	
Percentage concentration to the total air spora (daily)		19 6	9 5	8 06	30 2	1 4	0 5	29 9	0 5																		

CONCLUSION

The present study has provided some information about the aerobiological characteristics of the atmosphere over the southern ocean for a limited area. Extensive sampling over wider area would have to be made for a better understanding and comparative studies.

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