DISCUSSION

The study of air spora of the Library was carried out from 1st April 1981 to 30th September 1981. During the period of investigation the total number of spora (biopollutants) trapped was 16,155. The groupwise distribution of these spores is as follows.

1.	Phycomycetes spores	(1288 M^3)	contributing	7.972 %
2.	Ascomycetes ,,	(785 M^3)	,,	4.859 %
3.	Basidiomycetes ,,	(3511 M^3)	,,	21.733 %
4.	Deuteromycetes ,,	(9343 M^3)	,,	57.833 %
5.	Other Groups	(1228 M^3)	,,	7.60 %

to the total number of air spora. Graphs showing variations per month and their Histograms are given separately.

Air spora of the Library is very rich in fungal spores. There number varies from month to month due to the factors like temperature, rainfall and humidity. The peak period of fungal spore concentration was in the month of September. In the rainy season particularly in the months of June, July the percentage of these spores in the atmosphere was very low, because most of them were probably washed off. But after the rainy season their concentration gradually increases and reaches maximum in the month of September. The high concentration of these spores in atmosphere plays an important role on plant, animal and human health.

From Phycomycetes only the O.espores of sclerospora were recorded. They contribute 7.972 % to the total air spora which is quite high due to the occurence of downy mildew disease of jowar, and Bajra i.e. common cultivated crops around the library. Mane (1975) reported for the first time the spresence of O.espores of sclerospora from the Bajra field at Vaijapur.

During this investigation the total number of Ascospores encounted are (785 M^3) with 4.859 % to the total air spora. The ascospores of the genera Ascotricha, Capnodium and Meliola were not previously recorded from the Air spora; but due to occurence of suitable hosts around the campus these fungal organisms encounted. Their spores are transported from one place to other with the help of wind causing sooty moulds on their suitable host plants. Among ascomycoteous members the Ascotricha, Capnodium, Meliola, Hysterographium Patellaria.

The presence of ascospores is dependent up on the environmental factors like temperature, rainfall and humidity. Meredith (1961) showed that the temperature and rainfall stimulate the development of reproductive structures which are of prime importance in determinating the long term periodic fluctuations i.e. abnormal cycle of air spora.

Among the Basidiomycoteous members, the spores of rusts and smuts were trapped during this investigation. The smut spores were trapped during this period is relatively large

with (17.202 %) concentration. This is correlated with the outbreak of the smut disease in plants like Jowar, Sugarcane, etc. In this area. The Teliospores of Puccinia Pers, were also recorded but in very low concentration (0.0657 %).

The smut spores (Chlamydospores of various genera) are included in only one category i.e. the smuts. High percentage (17.20 %) of these spores indicates their abundance in the atmosphere of the library. High concentration of smut spores were also recorded by Ramalingam (1971) from Mysore. The smut disease on various field crops like Jowar, Bajra, Sugarcane, etc. is correlated with occurence of these spores in the air. Gregory (1973) pointed out that, blowing away (deflation) occurs commonly with dry spored fungi, including moulds, smuts and rust uredo spores because the spores are often present on an elevated sporosphere. Higher the wind-spread, the more spores are carried away. Spore shedding in higher Basidiomycetes is less affected by humidity and wind speed. Smut spores were proved to be one of the potential factors of allerginicity in cattle (Ivanov 1949) and it is worthwhile to study their atmospheric incidence in greater detail coupled with clinical studies.

As far as Deuteromycetous spores are concerned, they were in highest (9343 M^3) number and they contributed 57.833 % to the total number of air spora. The genus Nigrospora was in highest concentration and the chief constitutent of the

air spore of the Library with 17.00 % contribution to the total numbers.

During this investigation many new types were recorded. Their percentage contribution is given separately in Table No.I.

Hyphal frangments, insect scales, xylem Fibers, algal fragments, unidentified fungal spores were also trapped during the year and grouped under the other types.

Hyphal fragments contributed (3.53 %) to the total air spore.

The algal fregments (especially from cyanophycese group) were recorded through out the investigation period of six months and may Form colonies of asexual reproduction.

An increase in the concentration of insect/scales in the atmosphere was usually associated with humidity and high velocity. The spore population in the air was low during the rainy season while in dry season: The temperature and humidity has a profound effect on the growth and development of the spores, due to which their concentration increases or decreases during dry or wet season.

Agrawal et al (1969) reported that the fungal spore concentration depends upon seasonal variations. According to Gregory (1973) and Meredith (1962) rapid changes in the humidity during early morning and early night hours probably play significant role in releasing new conidia into the air.

He (1973) has further mentioned that human activities also affect the atmospheric spore concentrations like mowing and tedding of grasses etc.

Shanmuganathan and Arulprangasam (1966) have observed that if there is a continuous rain of several hour duration, there is generally a drop in the daily catches of spores. Hirst (1953) has shown that the spores of Cladosporium, Erisiphae, Alternaria and smuts (mainly the components of dry air spora) are mostly removed by prolonged rain and are replaced by 'damp air spora' (Mainly Ascospores and some Basidomycetous members).

Another factory affecting the spore load is the intensity of the wind, high wind velocity usually carried more spores than the low. Zeberi (1961) and Ingold and Zeberi (1963) have made a study of the take off of mould spores in relation to wind velocity and humidity. Dry spored types were found to be most effectively liberated at low relative humidity and wind speed.

Regarding disease development and spread it can be said that the plant diseases generally do not occur unless following requirements are fulfilled.

I) There must be host plant in a vulnerable or susceptible condition.

II) There must be a infective spore or a vegetative part of a pathogen on the host or in position to be quickly transferred to the host.

Weather conditions play an important role in the seasonal development of many diseases. Meredith (1971) has reported the dispersal of spores of tropical plant pathogens.

The air borne pollen grains of many different types are allergenic to sensitized persons and causes the distressing symptoms on his health. There are also many fungi which are also air borne and capable of causing similar allergenic symptoms. According to Feinberg (1946) the fungi which are mainly belongs to class fungi imperfecti are responsible for allergies in man, and these members are Particularly species of Alternaria, phoma, Chaetomium, Cladosporium, etc.

In regard to clinical implication of Alternaria, Feinberg (1935-46). Firstly demonstrated its importance as a cause of allergy. It was found to be commonest factor, in a series of about 68 patients with Cutaneous reaction to fungi. Durhaman (1937) have reported that Alternaria was the most abundant allegen in the central United States from rocky mountains to the appalachains.

Flensberg and Sammes-Jansen, T. (1950) reported that mould spores are also allergic. Sinha and Johri (1971) while discussing the biopellutions have mentioned that organism itself modify their environment and the environment in its own turn modify the organisms. Bacteria, Fungi, viruses and Pollen grains many times causes pollutions in the air. These biological agents are called as Bio-pollutants and the process is called as Biopellution. In India there are about 90 % counts

of air borne biota belongs to fungi. In the present investigation Cladosporium contributed nearly 3.033 % to the total air spora. Ramalingam (1971) in his general survey has reported about 68 types of air borne pollutants which are harmful to plant and animals health.

Hansen (1928) studied the role of fungal spores and he reported that these spores are etiological elements in hay fever and asthama and has further state that the spores of Aspergillus and Penicillium can bring about the asthama in man. Durie (1963) showed the following fungi to which patient reacted in order of frequency.

1. Fusarium
2. Mucor
3. Chaetomium
4. Alternaria
5. Pullularia
6. Helminthosporium
7. Neurospora
8. Phoma
9. Penicillium
10. Cladosporium
11. Aspergillus
12. Pleospora
13. Stemphyllium
14. Epicoccum

Nilsby (1949) reported that the spores of mould fungi develop allergenic reactions in the same manner as Pollens. They are smaller than pollen and thus can easily remain, suspended in the air and go far down in the bronchial system.

During present investigations total number of types recorded through-out the investigation period i.e. from 1st April to 30th September (1981) is sixty three and out of these the total number of aeroallergens present inside the library in nine, which have been proved to be allergic in nature by the previous workers.

1. Alternaria
2. Helminthosporium
3. Phoma
4. Chaetomium
5. Cladosporium
6. Smut spores
7. Pleospora
8. Curvularia
9. Epicoccum