BIRBAL SAHNI INSTITUTE OF PALAEOBOTANY

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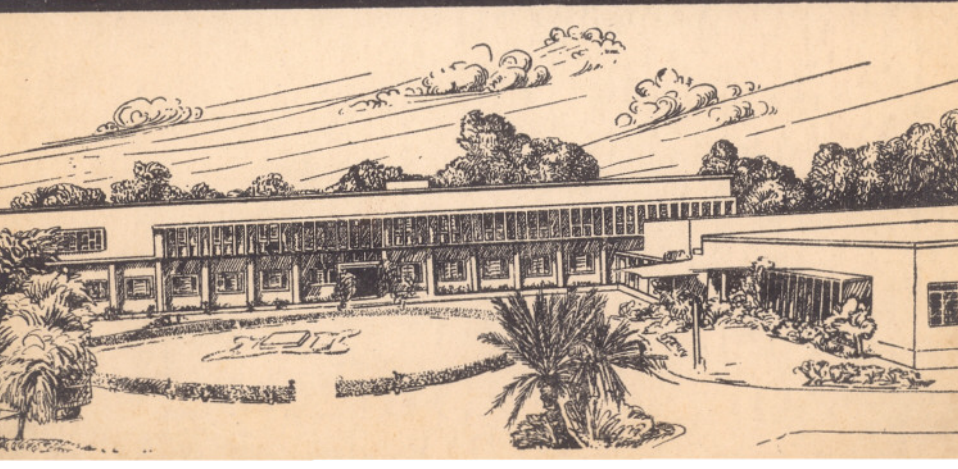

CONTENTS

I INTRODUCTION

The Institute is devoted to the promotion of higher study and research in all aspects of palaeobotany and to the dissemination of palaeobotanical knowledge. Its scientific activities are carried out in the following six departments :

1. Department of Palaeozoic Palaeobotany.
2. Department of Mesozoic Palaeobotany.
3. Department of Cenozoic Palaeobotany.
4. Department of Coal Palaeobotany.
5. Department of Quaternary Palynology.
6. Department of Oil Palynology.

Besides, there is a Geology section to render help in geological, specially stratigraphical, problems and a recently started C-14 Laboratory which is being established to provide Radio-Carbon dating facilities.

All the scientific studies have been conducted under the various projects which were formulated under the Fourth Five Year Plan, the year under report being the last year of the IV Plan. The main achievements may be summarized as follows.

The morphology of the glossopterid fructifications *Kendostrobus*, *Scutum* and *Cistella* from the Lower Gondwana of India have been completed. Remains of Lower Gondwana ferns have been reclassified under 3 genera, viz., *Neomariopteris*, *Dichotomopteris* and *Dizeuqotheca*. Fossil plants and miospores from a coal-bearing bed of Singrauli have been studies in detail, on the basis of which a Lower Barakar age has been assigned to this bed.

Micro-organisms (containing algae, fungi and acritarchs) from the Bushimay system (Pre-Cambrian) have been worked out.

Palynological study of a drill Core from the Lower Carboniferous of Libya has been completed.

A study regarding the palynological composition of the basal Gondwanas in India has shown that Talchir palynofloras can be divided into 3 zones having sequential relationship. Further, Talchir sediments from Manendragarh have been studied.

Inter-relationships of palynofloras in Barakar Stage have been synthesized revealing 3 palynogical zones. Palynological study of Paraspani and Macharar Nala Coals (M.P.) has suggested the age of the former area to be Lower Jurassic.

Coal samples from Chirimiri cf., Kusmunda block of Korba cf., Umaria cf., Pali cf., Brahmani cf., and Umrer coalfield have been studied for dating and correlation.

Petrological and palyno stratigraphical studies of Wardha Valley coals have indicated that a Lower Barakar coal swamp coalified variedly depending on the water level of the coal forming peat. A proposal for definition of genetic type of coal that is characterized by complex features reflecting general conditions of accumulation of the original material has been forwarded to the International Coal Nomenclature Committee.

A study of Biopetrological constituents of Neyveli lignite has shown that the lignite may be categorized into two groups based on source material. They are (1) Xyloidal and (2) Attrital, suggesting separation of the material for selective use.

Investigations have been carried out on some fertile

organs described under new genera *Satsangia* (*S. companulata*) and *Nidia* (*N. ovalis*) and on a good number of mega-and microfossils from certain Triassic beds of India. The plant fossils of the genera *Gleichenia*, *Todites*, *Otozamites*, *Araucarites*, *Araucaria*, *Brachyphyllum* and *Desmiophyllum* have been worked out from the Jurassic-Cretaceous rocks. Mioflora from certain outcrops of the Upper Gondwana has also been studied.

A rich miofloral assemblage has been worked out from the Lower Cretaceous of Zaire.

Investigations of gymnospermous wood and a cone confirmed the presence of Araucariaceae in the Deccan Intertrappean flora. There are also evidences of the occurrence of other Marsileaceous remains besides *Rodeites*.

Fossil woods of *Terminalia* and *Afzelia-Intsia* type have been recognized in the Miocene deposits of Kutch.

Studies on the fossil wood of the Siwalik beds of Himachal Pradesh have revealed the occurrence there of *Dipterocarpus*, *Cassia*, *Cynometra*, *Albizzia*, *Millettia-Pongamia* and a member of Meliaceae. From other Siwalik beds in Bihar, leaf impressions of *Colocasia*, *Mangifera*, *Zizyphus*, *Indigofera*, *Bauhinia*, *Dalbergia*, *Gardenia*, *Cinnamomum*, *Litsea* and *Ficus* have been identified.

Woods of *Kayea*, *Gluta-Melanorrhoea*, *Cynometra*, *Elaeocarpus*, *Bursera*, *Terminalia*, *Sterculia*, *Garuga*, *Albizzia*, *Dipterocarpus*, and *Shorea* have been studied from the Neogene deposits of the Assam region.

Of the fossil woods studied from the Cuddalore Series of South India, some show a very close resemblance with such species of *Dipterocarpus* and *Sindora* as are today frequent in the Malayan region. This has a significant phytogeographical implication.

In Lower Assam, dinoflagellate stratigraphy of Jadukate, Mahadeo and Langpar formations has been successfully concluded to demarcate the Cretaceous-Tertiary boundary. Lower Tertiary Palyno-assemblages recovered from a number of bore-holes of Nangwalbibra, broadly assignable to the Tura Formation in the Garo Hills of Meghalaya, have been palynologically correlated and dated. In Upper Assam, the Girujan Clay Formation in Nahorkatiya deep well has been palynologically divided into 3 biozones, which gives palynological basis for identification of Upper, Middle and Lower levels of the formation in respect to the Top of Tipam Formation. Palynology of another deep well indicates that the distribution of Key forms demarcating the various levels of the Palaeogene sediment of Lower Assam also persist in Upper Assam. It is significant to record that Girujans and Namsangs developed around Arunachal Pradesh have yielded recycled Permian forms while Girujans of Dihing river contain recycled Eocene forms. Also the Surma sediments of Nichuguard area contain recycled Permian forms. These evidences indicate that Permian and Eocene sediments were exposed in parts of Upper Assam during Upper Tertiary depositional cycles.

In Himachal Pradesh preliminary observations on the Subathu assemblage indicate the presence and abundance of hystrichosphaerids together with fewer spores and pollen grains. It has been observed that fresh-water elements, represented by the alga *Pediastrum*, are intermingled with the predominantly marine assemblage indicating near-shore conditions of deposition.

In South India a rich marine siliceous microfossil assemblage from Cauvery Basin and a well preserved dinoflagellate assemblage from Western Ghats have been recovered.

In Western India stratigraphically located samples from

a number of measured sections belonging to the Matanomadh (Palaeocene) and Kakdi (Lower Eocene) formations indicate that these rock units can be further divided into finer biostratigraphic zones.

Four hundred fifty pollen slides of plant species from Nepal, Gujarat and Lucknow were prepared and studied in relation to pollen analytical work in progress.

Eight hundred and twenty index cards for modern pollen grains were prepared.

As many as seventy surface samples from Bengal, Gujarat and Nepal were investigated and charts prepared showing details of pollen spectra.

Pollen analyses of profiles from Namkhana, Ulubaria, Kolera (Bengal); Nalsarovar and Dumas (Gujarat) : Thimi, Kalimatti and Manihara (Nepal) and of Purana Qila bricks (New Delhi) were carried out and pollen profiles constructed where samples yielded sufficient pollen grains.

The carbonised seed remains from Surkotada, Gujarat and Kalibangan, Rajasthan, the Harappan sites and the Neolithic site Non Nok Tha (Thailand) were carried out.

777 seeds and fruits of germ plasm were collected from Indian Agriculture Research Institute and added to the Institute Herbarium.

II RESEARCH

Pre-Gondwana

1. 1. India

1. 1. 1. *Search for the evidence of early plant life in the Vindhyan Formation.*

Rock samples collected around Ramapura were subjected to maceration. Rich remains of micro-organisms belonging to algae and acritarchs have been recorded.

1. 1. 2. *Observations on the possible Psilophytic remains from the Silurian of Spiti.*

Impressions of axes preserved in the Silurian rocks of Spiti were examined. Their study showed that the evidences to identify them as remains of land plants are wanting. On the basis of their organisation, algal affinity has been suggested and the forms have been referred to *Algites enteromorphoides* Basson.

1. 2. Abroad

1. 2. 1. *Micro-organisms from the Bushimay System of Zaire*

Micro-organisms from the drill core samples collected from Kanshi, Zaire (Bushimay System) were studied. The micro-organisms consist of remains of algae, fungi, acritarchs and indeterminate remains. The assemblage consists of 25 genera belonging to 40 species. The algal genera are *Gunflintia, Siphonophycus, Sphaeraphycus, Palaeonacystis, Myxoccoides, Palaeomicrocystis* gen, nov., *Glenobotrydion.* Fungi are represented by 1 genus, *Eomycetopsis* The acritarcha remain:

are *Protoleiosphaeridium, Symplassosphaeridium, Trematosphaeridium, Granomarginata, Vavosphaeridium, Archaeofavosina, Leiosphaeridia, Lophosphaeridium, Orygmatosphaeridium, Kildinella, Nucellosphaeridium, Baltisphaeridium, Zonasphaeridium,* and *Tasmanites.* On the basis of the micro-organism assemblage a Late Pre-Cambrian age has been assigned to these rocks. A paper has been completed and sent to press.

2. LOWER GONDWANAS

2. 1. Morphological studies in the Glossopteris Flora

2. 1. 1. *Auranga Coalfield, Bihar.*

The study of mega - fossils collected from Gowa (Karharbari Formation), Churia (Barakar Formation and Serek-Gurtur (Raniganj Formation) of the Auranga Coalfield has been completed. 2 species of *Glossopteris,* 1 species each of *Euryphyllum, Samaropsis* and *Cornucarpus* have been identified from Gowa. From Churia, 4 species of *Glossopteris,* new articulate form with dimorphic leaves and some scale leaves are recognised. In Serek-Gurtur, a glossopteridean fructification, 1 species of *Phyllotheca* and some scale leaves have been identified.

2. 1. 2. *South Karanpura Coalfield, Bihar*

Glossopteris leaves collected from the Lower Nakari seam (Barakar age) have been studied. 10 types of *Glossopteris* have been identified.

2. 1. 3. *Raniganj Coalfield, Bengal.*

A. Remains of Ferns collected from the Raniganj Formation of the Raniganj Coalfield have been studied. The Ferns earlier described as *Sphenopteris, Pecopteris, Alethopteris, Merianopteris* and *Ptychocarpus* are reclassified under 3 genera viz.,

Neomariopteris gen. nov., *Dizeugotheca* and *Dichotomopteris* gen. nov., on the basis of frond morphology and the arrangement of reproductive structures. 3 papers on these remains have been completed and sent for publication.

B. The male fructification described by Dr. K. R. Surange in 1957 from the Kenda Colliery of Raniganj Coalfield was reinvestigated. A new name *Kendostrobus* has been proposed for the same and *Kendosporites* for the monolete spores obtained *in situ* from the fructification.

2. 1. 4. *Mahanadi and Brahmni Valley, Orissa.*

Investigations on *Scutum* and *Cistella* have been completed. A new seed genus *Indocarpus* has been instituted for one-winged seeds. Completed the study on two new and three previously known species of genus *Eretmonia*. Study on the detached scale leaves belonging to glossopteridean fructification is nearing completion.

2. 1. 5. *Singrauli Coalfield, M. P.*

A small collection of plants from the Upper Talchir Formation of Singrauli Coalfield has been identified. The plants, preserved as impressions on a highly calcareous sandy shale, comprise (i) *Noeggerathiopsis hislopi* (ii) *Gangamopteris cyclopteroides* (iii) *G.* cf *major*, (iv) *Gangamopteris* sp. and (v) *Samaropsis goraiensis*. No spores have been found in these shales.

A sequence referable to the Lower Barakar Formation is exposed in the Gaurbotha Nala, near Bansi Village. From one carbonaceous shale member of the sequence, some well preserved plants were earlier described by Lele, Swaroop and Singh (1968). On further splitting of this material a number of better preserved leaves and seeds have been

obtained which have, in most cases, yielded cuticular structure. Some previous records have now been revised. The following taxa are recognisable :

Glossopteris indica, *G.* cf. *damudica*, *Glossopteris* n. sp. A. (with cuticle), *Glossopteris* n. sp. B. (with cuticle), *Glossopteris* sp., *Gangamopteris* sp. A., *Macrotaeniopteris* n. sp. A. (with cuticle), *M.* cf *feddeni* (with cuticle), *Schizoneura wardii*, *Samaropsis* n. sp. A. (with cuticle), *Samaropsis* sp., *Cordaicarpus* n. sp. A. (with cuticle), *Cordaicarpus* n. sp. B., Stem and bark-impressions with *Buriadia*-like scars on surface, probably similar stems have yielded tracheids with araucaroid pitting.

The external morphological details of the above flora have been studied. The cuticular structure remains to be investigated in detail for delimiting the taxa more precisely.

2. 1. 6. *General*

The following reviews have been completed :

(a) *Glossopteris* and allied remains-cuticle.

(b) Unclassified Gymnosperms from the Lower Gondwana.

(c) Gymnospermous woods and stem remains from the Lower Gondwana.

2. 2. Sporae dispersae and palynostratigraphy

2. 2. 1. *Singrauli Coalfield, M. P.*

The plant-bearing shales referable to Lower Barakar sequence exposed in Gaurbotha Nala near Bansi village have yielded a rich mioflora, which has been completely investigated. The assemblage is dominated by non-striate disaccates followed by striate and monosaccates. Simple trilete and monolete forms are poorly represented. The macro- and miofloral evidence of the Lower Barakar sequence

taken together may apparently confirm with a Lower Barakar age for the beds, probably close to the Karharbari/Barakar boundary.

A successional collection of Talchir exposures from Saura and Baghayya Nalas, Singrauli Coalfield, M. P. has been macerated. All the samples have proved to be barren of miospores.

2. 2. 2. *Auranga Coalfield, Bihar.*

Study of microfossils belonging to Karharbari (Gowa) Barakar (Tubed) and Raniganj Formations (Serek-Gurtur) was undertaken.

2. 2. 3. *Jeer-Dasher area*

A collection of Gondwana sediments from Jeer-Dasher area, Son Valley basin in Sonhat area has partly yielded the spore and pollen grains. This assemblage dominated by the striate-disaccate genera along with the significant occurrence of *Densipollenites*, is Upper Permian in age and is indicative of the probability of Lower Permian beds being concealed below these sediments.

2. 2. 4. *Raniganj Coalfield*

Bore-Core NCRD—6 in the Dishergarh area near Asansol, Raniganj Coalfield, has been palynologieally analysed and a 3-zone miofloral succession extending from the Raniganj Stage into Panchet deposits has been found. The work is in the final stage of manuscript.

Bore-Core NCRD-2 in the Raniganj Coalfield has been taken up for palyno-stratigraphical analysis. The maceration and slide preparation is in progress.

Out of seven bore-hole coal samples from Raniganj Coalfield six contained a rich mioflora. Striated disaccates

occur in abundance and on the basis of quantitative representation they have been assigned to Raniganj age. All the six samples are from one miofloral zone.

2. 2. 5. *Chirimiri Coalfield*

Twenty two samples from western part of the Chirimiri Coalfield were studied palynologically. The mioflora is rich in radial monosaccates and trilete miospores. Two biozones were recognised equating with the Talchir and Karharbari stages of Lower Gondwanas of India.

2. 2. 6. *Korba Coalfield*

Six bore-hole coal samples from Kusmunda block of Korba Coalfield were studied palynologically. The mioflora is characterised by the abundance of striated disaccate pollen grains. Nonstriated disaccates follow them closely. As such, two biozones have been marked, each representing a separate seam successively in the respective bore-holes

2. 2. 7. *Lakhanpura Coalfield*

Six bore-hole coal samples from Lakhanpura Coalfield were macerated but none of them contained miospores.

2. 2. 8. *Umaria-Pali Coalfield, M P.*

Thirty one samples from Umaria Coalfield were studied palynologically. Out of these, 25 proved barren of miospores while the rest yielded a rich mioflora. Amongst these two distinct biozones have been marked. The older biozone is rich in radial monosaccates associated with *Callumispora* and is similar to Lower Karharbari Stage, while the younger biozone is rich in nonstriated disaccates.

Seventeen samples from Pali Coalfield were macerated, out of which only 7 contaned miospores. They were rich in radial monosaccates.

2. 2. 9. *Brahmini Coalfield, Bihar*

Lower Godwana sediments exposed in Joram Nala in Brahmini Coalfield, Rajmahal Hills were studied palynologically. Out of 61 samples macerated only 12 contained rich miospores. The mioflora is profusely dominated by striated disaccate pollen grains closely associated with *Densipollenities*. This association is typical of Barren Measures Stage.

2. 2. 10. *Umrer Coalfield, Maharashtra*

The coal seams and associated sediments from Umrer Quarry, Nagpur have been studied palynologically. The mioflora recovered is either dominated by the trilete miospores or the radial monosaccate spores. Three biozones are recognized on the basis of statistical analysis. Basal biozone—I is characterised by the over-all dominance of apiculate trilletes along with *Sulcatisporites* and *Parasaccites*. The middle biozone II is dominated by the radial monosaccates and *Sulcatisporites* with a significant increase in striated disaccate also. These biozones have been suggested to represent the Karharbari Stage in Umrer Coalfield.

2. 2. 11. *Manendragarh area*

Talchir sediments exposed in Basia Nala and Hasdo River sections of Manendragarh area were studied palynologically. Palynological zones based on quantitative representation of various palynotaxa have been described and compared with the other known Talchir assemblages. The mioflora shows the dominance of radial monosaccate pollen grains mainly *Plicatipollenites* and *Parasaccites*. The gradational change in the mioflora has been noticed between the older and the younger sediments of the Talchir formation.

2. 2. 12. *Satpura Gondwana Basin*

Fifteen samples from Ranipura and Sukhtawa areas of Satpura Gondwana Basin were macerated. All of them proved to be barren of miospores.

2.2 13. *Pench-Kanhan Coalfield*

The palynological details of the Lower Gondwana sediments of Pench-Kanhan Coalfield were compiled for publication.

2. 2. 14. *South Karanpura Coalfield*

Morphografic description of various palynotaxa found in the samples from South Karanpura Coalfield is in progress.

2. 2. 15 *General*

A. Morphotaxonomic study of some miospore genera from Korba, Chirimiri and Talchir Coalfields (Lower Gondwana) is in progress.

B. A synthesis of data regarding the palynological composition of the basal Godwanas in India suggests that the Talchir palynofloras can be divided into 3 zones. The average Talchir mioflora suggests a continuity with the younger miofloras of the Lower Godwanas, hence a sequential relationship has been established.

C. Inter-relationships of the palynofloras in Barakar Stage have been synthesized. The results of this study suggest that within the Barakar Stage four miofloral lines can be drawn, which demarcate the setting-in of the miofloral changes. These lines from older to younger horizons are (i) monosaccate/zonate/apiculate-

line (ii) *Scheuringipollenites* line (iii) striate-disaccate-line (iv) striated – disaccate, *Densipollenites* line. These lines divide the Barakar mioflora into 3 palynological zones. Laterally, the inter-basinal relationships of mioflora indicate microclimatic changes from one region to another. This study also suggests that more successional studies are required to be undertaken to fill the gaps.

2. 3. Petropalynology of coals.

2. 3. 1. *Wardha Valley coals*

Petrology and palynostratigraphic studies of Wardha Valley coals have indicated variable coalfication of coals from a coal swamp of Lower Barakar mioflora. A manuscript incorporating the details has been prepared for publication.

2. 3. 2. *Singreni Coalfield*

The palynological study of all the working coal seams from different areas of Singreni Coalfield were completed. Eight miofloral assemblages were recognised, all within Barakar Stage. The petrographic studies are yet to be completed as the machine section is out of order.

2. 3. 3. *General*

A. Proposal for definition of genetic type of coal that is characterized by complex features reflecting general conditions of accumulation of primary transformation of the original material is made to the International Committee of Coal Petrology.

B. Coal blocks from different coal basins from Barakar Stage have been examined for determination of genetic types

of coal. Several analyses of the coals have suggested grouping of composite coal microlithotypes or material groups for determination of genetic types of coals. The work is in progress.

C. Revised the earlier prepared manuscript on Palynostratigraphy and Petrography of coals from Pench-Kanhan Coalfield and submitted for publication.

3. PALAEOZOIC FROM ABROAD

3. 1. Megafossils and woods.

3. 1. 1. *Fossil woods from Zambesi Basin.*

A new species, *Zalesskioyxlon zambesiensis* has been recognised from Zambesi. The paper has been sent for publication.

3. 2. Sporae dispersae and Palynostratigraphy.

3. 2. 1. *South Africa.*

Systematic palynology from the Lower Gandwanas of South Africa has been done. The systematic description is complete.

3. 2. 2. *Brazil.*

The palynological data obtained from the study of Parana and Maranho basins of Brazil are being compiled for publication.

4. MESOZOIC

4. 1. Megafossil assemblages

4. 1. 1. *Triassic of Nidhpuri Area, Madhya Pradesh*

Work has been carried out on the Triassic plants from Nidhpur and its nearby localities in the Sidhi District of

Madhya Pradesh. The following fossil plants have been tentatively identified from this area : *Sphenopteris* sp., *Glossopteris communis, G. damudica, G. boseiana* sp. nov., *G. browniana, G. retifera,, C. senii, G. taeniopteroids, Scutum* sp. *Vertebraria indica, Dicroidium* sp., *Taeniopteris gladulata* and some scale leaves.

Besides these, a few more fertile organs have been studied. Some specimens, supposed to belong to a fertile organ, have been decribed under a new genus *Satsangia* (*S. campanulata*). It consists of a bell-shaped body. The basal tubular part is densely covered with unicellular trichomes ; the outer surface of the expanded part is smooth except for some faint longitudinal ridges, the inner surface bears irregularly arranged oval scars. Trichomes are visible at place in between the scars. The affinities of the genus are not yet certain. A new megastrobilus, *Nidia ovalis* gen. et sp. nov. has also been described. The megasporophylls are arranged in a close spiral and consist of a stalk enlarging into an expanded distal head which bears two sessile seeds on its either side. Sporophyll's cuticle is amphistomatic. The genus *Nidistrobus* Bose & Sriv. has been revised in the light of some new specimens. A relationship amongst *Nidistrobus harrisianus*, *Nidia ovalis* and *Dicrodium nidpurensis* Bose & Sriv. has been suggested on the basis of similar cuticular features. A new species of *Pteruchus* has also been worked out.

4. 1. 2. *Jurassic of Rajmahal Hills.*

The slides have been prepared out of the examined chert slides from the Jurassic of Nipania, Rajmahal Hills, Bihar. Some fossil conifer twigs have also been examined. The work on the cycadophytic foliage has been continued. *Otozamites* from the Rajmahal Hills has been described and sent to the press. Some of the species of the genus *Pterophyllum* have been re-decribed.

4. 1. 3. *Jurassic—Cretaceous of Madhya Pradesh.*

Research work has been completed on some fossil plants belonging to *Gleichenia, Todites, Cladophlebis, Sphenopteris* and *Desmiophyllum* from the Upper Gondwana of Madhya Pradesh. Three species of the genus *Ptilophyllum* have also been identified on the basis of cuticular features. Their specimens and cuticles have been photographed. The text-figures and descriptions have been partly completed.

4. 1. 4. *East Coast Gondwanas*

A large number of fossil plants were collected in early 1973 from the Atgarh Basin. The description of the genera *Gleichenia, Cladophlebis, Sphenopte is, Brachyphyllum* and *Elatocladus* have been completed. Some of the specimens have been photographed. Preparations of their text-figures have been started.

4. 1. 5. *Indian Mesozoic Conifers*

Some detached seed-scales belonging to Araucariacae from the Mesozoic rocks of India have been studied. A detailed account of *Araucarites cutchensis* Feistm., *A. minutus* n. sp., *A. sehoraensis* n. sp. and *Araucaria pantiana* n. sp. has been published. The non-ligulate forms have been described under the genus *Araucarites*, while the ligulate ones have been placed in the extant genus *Araucaria*. *Araucarites cutchensis* includes impressions only. The remaining three species are based on the cuticular features of the seed-scales. A review paper on "Indian Mesozoic Conifers" has been completed and sent for publication.

4. 2. Sporae dispersae and palynostratigraphy

4. 2. 1. *Lower Triassic megaspores from Asansol*

A large number of megaspores have been recovered from the Lower Triassic beds exposed in the Nonia Nala

near Asansol. Several of the specimens have been photographed. The descriptions have been partly completed.

4. 2. 2. *Lower Triassic mioflora from Auranga Coalfield*

The palynological samples from a new Triassic locality in the Auranga Coalfield, Bihar, have been macerated. The assemblage comprises about 18 genera and 8 species. *Verrucosisporites*, *Decisporis* and *Playfordiaspora* are characteristic forms in this assemblage. The identifications and photography of the mioflora have been completed.

4. 2. 3. *Lower Cretaceous palynomorphs from the Bansa Formation*

A paper on the mioflora from the Bansa Formation has been completed and sent for publication.

4. 2. 4. *Mioflora from the East Coast Gondwanas*

Studies on the mioflora from the Athgarh Basin have been continued. Some of the specimens have been photographed.

4. 2. 5. *Palyno-stratigraphy of Mesozoic sediments from Macharar Nala, Bansa, M. P.*

Ten carbonanceous shale samples exposed in the Macharar Nala, Bansa, Shahdol district belonging to Bansa Formation included in the Jabalpure Stage, have been macerated. Five of them have yielded miospores. Quantitatively two different miofloral assemblages, A (older) and B (younger) have been encountered. Assemblage—A has the dominance of *Callialasporites* associated with subdominant *Araucariacites*. Assemblage—B shows the dominance of *Araucariacites* with subdominant *Callialasporites*. The cryptogamic miospores

are rare in both the assemblages. A comparison of the mioflora with the Indian Upper Gondwana mioflora reveals that the assemblage – A from Bansa closely resembles the Bottom-zone of Upper Katrol, and Assemblage – B compares well with the Middle-zone of Upper Katrol. The Upper Katrol assemblages are dated as Upper Jurassic indicates and hence the assemblages from Bansa could also be dated as Upper Jurassic.

4. 2. 6. *Palynostratigraphy of Parsapani coals, M. P. India.*

Further work on the above coals has suggested that the Parsapani sediments are little older than that of Rajmahal Hills deposits and it might li in the Lower or Middle Jurassic.

4. 3. Mesozoic from abroad

4. 3. 1. *Palynological studies on some Zirab Coals, Persia.*

Taxonomic study is in progress.

4. 3. 2. *Palynological studies on some Mesozoic coals of Iran.*

Ten out of twentyfour coal and coaly shale samples from Iran have yielded a good number of spores and pollen grains. Scanning process of good miospores has been completed. Taxonomic study is continued.

4. 3. 3. *Palynology of the Lower Cretaceous Loia Series, Zaire.*

Twentyfive samples of the Loia Series represented in the Samba borings at depths from 564.98 m. to 840.24 m. were palynologically examined. The important genera in the assemblage are : *Cyathidites, Perotriletes, Couperisporites, Equisetosporites, Cycadopites, Classopollis, Tricolpites, Schizosporis* and *Galeacornea.*

5. CENOZOIC

5. 1. Morphological and Anatomical studies.

5. 1. 1. *Deccan Intertrappean Flora (Palaeogene)*

Further studies were carried out on *Sahnipushpam* and *Rodeites* by preparing more sections of both of them. A conifer wood found embeded in chert was studied in detail and photographed. Because of araucarian pitting, the wood belongs to the family Araucariaceae and furnishes further evidence of the presence of this family during the Early Eocene period in India. It also confirms indirectly the affinity of *Mohgaostrobus* as belonging to Araucariaceae as already suggested by its author.

While preparing sections of chert for the study of *Sahnipushpam* and *Rodeites*, some marsileaceous and monocot axes with lot of aerenchyma along with some other unrecognisable plant fragments were also spotted.

5. 2. General

5. 1. 2. *Neogene woods from Kankawati Series (Manchar) Kutch.*

Study of fossil woods from near Mothala and Dhaneti villages futher revealed the presence of *Terminalia* of Combretaceae, *Afzelia-Intsia* of Leguminosae and a number of other leguminous woods.

5. 1. 3. *Fossil woods from the Siwalik beds of Nalagarh and Bhakra, Himachal Pradesh (Neogene).*

Studies were continued on the fossil woods from the Lower Siwalik beds near Nalagarh in Himachal Pradesh. Seven of these were assigned to three species of Dipterocarpus and one each of *Cassia*, *Cynometra*, *Albizzia* and *Millettia-Pongamia*, while one was tentatively assigned to the family Meliaceae. The paper is almost ready.

Four new woods were described and photographed and await identification.

5. 1. 4. *Leaf impressions from the Siwalik beds near Bikhnathoree, Bihar (Neogene).*

Ten leaf impressions resembling those of *Colocasia antiquorum, Mangifera indica, Zizyphus mauritiana, Indigofera pulchella, Bauhinia* spp. *Dalbergia sissoo, Gardenia turgida, Cinnamomum tamala, Litsea nitida* and *Ficus cunea* were identified and a paper is almost complete.

5. 1. 5. *Neogene fossil woods from Eastern India*

(a) *Tipam Series.*

Studies on petrified woods from the Miocene of Tipam sandstones near Hailakandi in Cachar district of Assam were continued. Ten fossil woods were cut and sections prepared. They were identified as belonging to *Kayea, Gluta-Melanorrhoea, Cynometra* and *Elaeocarpus.* Further studies also revealed the presence of *Bursera* and *Terminalia* from this area. It is interesting to note that modern equivalents of all these fossils are still found in the forests of Assam or neighbouring areas. The fossil wood of *Bursera* is known for the first time from India and abroad.

(b) *Dupitila Series.*

Study was continued on the fossil woods from Namsang beds near Deomali in Arunachal Pradesh (NEFA). This indicated the presence of six new types resembling the modern woods or *Sterculia, Garuga, Albizzia, Dipterocarpus, Shorea* and a member of Lauraceae. Fossil woods of already known species of *Cynometra, Cassia, Calophyllum* and *Afzelia-Intsia* were also encountered.

5. 1. 6. *Fossil woods of the Cuddalore Series (Neogene).*

A number of fossil woods from the Cuddalore Series of South India near Pondicherry were studied. Some of them are new which show closest resemblance with those of *Dipterocarpus, Hopea, Nephelium, Sindora, Albizzia, Daubanga, Chrysophyllum* and *Holoptelea.* Of these, *Dipterocarpus* and *Sindora* are of great phytogeographic importance since the modern species of these with which the fossil woods resemble most are found in the Malayan region. Besides, revision of the affinities of previously known woods viz.. *Guttiferoxlon indicum* Ramanujam (1960), *Celastringoxylon dakshinense* Ramanujam (1960), *Albizzioxylon sahnii* Ramanujam (1960), *Dalbergioxylon antiquum* Ramanujam (1960) and *Dipterocarpoxylon cuddalorence* Navale (1963) was completed.

5. 2. General

5. 2. 1. *Evolutionary trends in the secondary xylem of Indian Territary flowering plants and their significance.*

A survey of the massive anatomical data of the secondary xylem accumulated in the Indian Tertiary during the last two decades have revealed some intresting facts in the anatomical specialization of the flowering plants from the Palaeogene to the Neogene.

It is in the parenchyma pattern and the nature of xylem rays that a marked specialization or structural evolution has been in the Neogene taxa in contrast to Palaeogene forms which are characterised by primitive parenchyma types and the ray structures in majority of cases. Scanty paratracheal and diffuse types of parenchyma are seen in most cases in the Palaeogene. These are primitive types. However, in most of the Neogene forms the parenchyma is more abundant occuring as wide vasicentric, aliform to confluent and in thick metatracheal bands, which are regarded

as highly specialized or evolved types as compared to the former.

Similarly, the xylem rays also show a marked evolution in many taxa of the Neogene in contrast to the Palaeogene forms where primitive type of ray structures are quite common. In Palaeogene, the primitive ray structure with heterogeneous type I and II rays are found in most of the taxa and the more evolved homogeneous rays are only present in a few cases. As against this, the Neogene forms show an increasing tendency of having homogeneous rays in the Miocene and further anatomical specialization.

As a result of this analysis, a xylotomic subdivision of the Indian Tertiaries into the Palaeogene and the Neogene is possible based mainly on the type of parenchyma pattern and the ray structure.

5. 3. Sporae dispersae and palynostratigraphy

5. 3. 1. *Makum Coalfield, Upper Assam.*

Scanning of the slides of the remaining 90 samples (total 170 samples macerated out of which only 121 samples yielded spores and pollen) has been done ; photomicrography has been completed and primary printing from negative also done. The study is in progress.

5. 3. 2. *Nazira Coalfield, Nagaland.*

Photomicrography of miospores from 4 samples from Nazira coalfield, Nagaland has been done. About 90 prints have been made for taxonomic study. Five remaining samples (total 30 samples from two bore cores—Bore Core No. I-18 samples out of which 5 yielded and Bore Core No. II-12 samples out of which only 4 yielded) collected from Changki Valley, Mokokchung Distt. Nagaland have been macerated. Only 9 samples yielded spore-pollen

content. Study of the 9 samples revealed that the spore-pollen assemblage of bore-core No. I is quite rich in angiospermic grains and pteridophytic spores are well represented. Spore-pollen assemblage of bore-core No. II is strikingly deficient in angiospermic grains while pteridophytic spores are markedly high in abundance.

5. 3. 3. *C. S. L. Jorhat material*

Three coal samples, sent by Coal Survey Laboratory Jorhat from Jeypore, Baragoloi and Tipang Collieries, have been macerated. All the three samples yielded spores and pollen grains. Study of these samples shows that spore pollen assemblages of all the three samples compare with already described Oligocene assemblage of Upper Assam.

5. 3. 4. *Oligocene of Tikak Parbat Stage.*

Seventy types of miospores were photographed from Oligocene of Tikak-Parbat Stage which are being identified with the modern taxa.

In order to identify the miospores recovered from the shale samples of Tura Formation at Damalgiri in Garo Hills and from the Oligocene of Tikak Parbat Stage at Ledo, Tipongpani and Baragoloi near Margherita, a detailed study of modern pollen flora of Assam region was taken up. Pollen slides were prepared from the well identified plants of this area. Photographs were taken from these pollen and spores for the preparation of reference cards. This is being continued as it would help us in the identification of miospores recovered from the Tertiary deposits of India.

5. 3. 5. *Upper Cretaceous-Tertiary sediments of South Shillong Plateau, Lower Assam.*

The paper on Cretaceous phytoplanktons of Assam, presented to the Second Indian Colloquium on micropalacon-

tology and stratigraphy, was finalized for publication. Further palynological study was continued from the Cretaceous sequence in order to identify the local and regional guide fossils. Processing of additional samples together with micro-photography of the important guide fossils was continued.

5. 3. 6. *Palynology of the Tura Formation in the Type Area.*

Palaeocene assemblages recovered from the bore-holes of Nangwalbibra belonging to the Tura Formation in the Garo Hills of Meghalaya have been palynologically correlated and dated. The assemblages have been correlated within the already instituted Cenozones e. g. *Dandotiasporea telonata* and *Palmidites plicatus*. However, four new subzones have been proposed to explain the dissimilar composition of the assemblages highlighting the influence of environment and condition of deposition. This study has been completed.

5. 3. 7. *Palynological study in Upper Assam for Oil India Project.*

A. Morphological study of the six species of spores related to Parkeriaceae was restarted on the basis of new information which show higher range of variation within the already instituted species. The distributional pattern of these species is being worked out in various stratigraphic levels of the Assam Tertiaries with a view to employing them as guide fossils.

B. Crude oil samples from Nahorkatiya well 256 were processed. Palynological evidence was not considered enough to through light on the probable age of the crude. A crude oil condensate was also chemically processed but without any success.

C. Six out of twenty-one samples from the Kharsang Exploratory well No. K-1 yielded spores and pollen grains.

The sediments in question were dated not older than Miocene in age.

D. A priority oil shale sample from NHK well No. 263 (3,540 metre depth) was dated as Lower Eocene on the basis of palynologic assemblage. It was concluded that the assemblage corresponds to that of the Tura top zone of Garo Hills and Lakadong Sandstone Member of the Sylhet Limestone Formation of Khasi and Jaintia Hills. Deltaic or an inland sea type of environment was postulated.

E. The Tipam-Namsang-stratigraphic interval has been palynologically studied. In this, the Girujan clay of NHK well No. 1 is divisible into three lithological zones and each of these rock units can correspondingly be identified by palynological means. The changes in the palynomorph composition reflect distinct changes in the depositional environment. Provisional biostratigraphic zones have been instituted in order to delimit various levels within the Girujans. Conditions of deposition and environment have also been interpreted.

5. 3. 8. *Simla Hills, Himachal Pradesh.*

About 150 samples collected from two measured sections of the Narag-Sarahan and the Kumarhathi-Baroti road section from the Simla Hills (Himachal Pradesh) have been chemically processed. About 25 samples proved productive. Microslides have been prepared and are being scanned.

5. 3. 9. *Subathus.*

Preliminary observations on the Subathu assemblage indicate the presence and abundance of hystrichosphaerids together with fewer spores and pollen grains. It has been observed that fresh-water element, represented by an alga

Pediastrum, is intermingled with the predominantly marine assemblage indicating near shore conditions of deposition.

5. 3.10. *Area around Madh and Narehi, West India.*

139 samples collected from 7 measured sections around Madh and Naredhi have been macerated. Of these 36 samples yielded palynological fossils. Slides have been prepared, scanned and photomicrography of the important taxa have been completed. Systematic description of the miospores is in progress.

5. 3. 11. *The Cauvery Basin.*

Twenty one stratigraphically located samples from a measured section near Pondicherry have been macerated for the recovery of microfossils. 3 samples yielded spores and pollen grains but no phytoplanktons. Microslide have been made and scanning completed.

Microphotography of the Dalmiapuram phytoplanktons has been completed. Taxonomic study is being continued with special reference to the genus *Gonyaulacysta*.

5. 3. 12. *The Western Ghats.*

Productive samples from measured sections near Edvai and Varkala have been scanned. Spores, pollen grains and dinoflagellates have been photographed. Taxonomic study of the dinoflagellates has been taken up.

5. 3. 13. *Deccan Intertrappean Beds.*

About 50 samples of chert were also macerated for the study of pollen and spores from the Deccan Intertrappean series. A rich variety of spores and pollen recovered were scanned and photographed. A detailed study of these is in progress.

5. 4. **Biopetrology.**

5. 4. 1. *Palyno-petrographic study of the organic remains.*

A. By polish surface technique (a new method developed) several biostructures of Neyveli lignite have been identified. Some of them are *Dipterocarpus*, *Callophyllum*, *Terminalia*, *Phyllanthus* type.

B. Morphographic study and identification of biopetrological constituents of Neyveli lignite samples have been completed. The significance of this study is the separation of lignites into two groups based on source material. The are (1) anthroxylous group derived from woody substances (2) attrital group derived from spore, pollen and resin material. The former has properties of good coking and calorific value. The latter is useful for hydrocarbon extraction.

C. A propsal on the classification of "Texinite" maceral group into Xylinite, Parenchymanite, Sclerenychmanite has been made to the International Commission of Lignite Nomenclature.

D. Study of Pollen and spore of the Main seam of Neyveli lignite area : Palynological analysis of the Main Seam has shown forms hitherto unknown in the area, the aim of the study is to prepare standard histogram of the Main Seam for comparison with other sections of the seam. The work is in progress.

5. 4. 2. *Assam*

The Petrological analysis of a sample from Assam has been carried out. It compares closely with attrital group of coals.

5. 5. Tertiary from Abroad.

5. 5. 1. *Fossil woods from Thailand.*

A collection of fossil woods sent to the Institute by the Royal Forest Department, Bangkok, Thailand, revealed the presence of *Millettia*, *Cynometra* and *Afzelia* of Leguminosae, *Anogeissus* of Combretaceae and *Diospyros* of Ebenaceae. The modern comparable species of these forms are still growing in the nearby forests in the north-east region of Thailand from where these fossil woods have been collected.

5. 5. 2. *Fossil woods from the Miocene of Zaire.*

Fossil woods sent by the Museum of Central Africa, in Tervuren, Belgium, were studied and tentatively assigned to *Millettia-Craibia*, *Cynometra*, *Crudia* and *Lebruniodendron* of Leguminosae, *Diospyros* of Ebenaceae, *Fagara* of Rutaceae and to palmae.

6. QUATERNARY

6. 1. Pollen morphology.

6. 1. 1. *Lucknow Flora.*

Twenty five pollen slides of six species were prepared and examined palynologically.

6. 1. 2. *Gujarat Flora*

Forty one pollen slides of nine species have been prepared and examined.

6. 1. 3. *Nepal Flora.*

Three hundred and ninety pollen slides distributed over eightysix species of Nepal flora have been prepared

6. 1. 4. *Pollen morphology of Indian Flora.*

Eight hundred and twenty Index cards comprising pollen diagnoses of Indian modern flora have been prepared from literature as per details below :—

Pollen et Spores	20 Cards
Pollen grains of Japan (By Ikuse)	180 ,,
Pollen Morphology and Plant Taxonomy (By Erdtman)	300 ,,
Journal of Palynology	250 ,,
Grana Palynologica	70 ,,

6. 2. **Pollen Analysis.**

6. 2. 1. *Kumaon Himalaya*

Nineteen moss cushions from Naintial—Bhowali area and six moss cushions from Bhim Tal-Sat Tal area in Kumaon Hills have been pollen analysed. Two charts showing the details of the pollen spectra constructed and a manuscript is prepared.

6. 2. 2. *Late Quaternary Vegetational History of Kumaon Himalaya.*

Part-I—It comprises general introduction and pollen morphology of over 400 species which have been finalized.

Part-II—The work on pollen analytical reconnaisance of Kumaon Himalaya dealing with pollen analysis of moss cushions and two peat profiles one each from Naukutchiya Tal and Bhim Tal in Nainital district has been finalized.

6. 2. 3. *Himachal Pradesh*

One paper entitled "Late Quaternary Vegetational history in Himachal Pradesh, 2—Rewalsar Lake" has been

processed and and submitted for publication in "*The Palaeobotanist*".

6. 2. 4. *Bengal Basin.*

Forty three samples from Namkhana profile near Sunderbans in Bengal have been pollen analysed. The samples are brown sandy clay and generally not rich in pollen grains and spores. However, fifty to one hundred pollen grains have been counted by examining five to eight slides. The pollen grains recovered from these samples are *Sonneratia, Rhizophora, Acanthus ilicifolius, Sueada, Clerodendron, Terminalia* Gramineae, Cyperaceae, Rosaceae, Palmae and trilete and monolete fern spores. A few specimens of *Concentricytes rubinus* have also been encountered. The Taxa recovered from these samples represent brackish-marine water conditions.

Fifteen samples from Uluberia profile in W. Bengal have been pollen analysed. The assemblage recovered indicate the fresh water environment. The peat samples from Kolara peat band, W. Bengal were subjected to re-maceration and re-examination so as to confirm the frequencies of the taxa already recovered from them in earlier preparations.

6. 2. 5. *Shillong, Assam.*

No work could be undertaken as the material previously collected was destroyed by the sub-soil rise of water in the basement where it was housed.

6. 2. 6. *Gujarat.*

Nalsarovar.

One profile from Nalsarovar (13 samples) were reinvestigated and pollen diagram prepared. The study has

revealed the dominance of Gramineae followed by Cheno-Amaranth type of pollen. *Holopteleae* is also recovered in quite a good number. Micro-foraminifera (both rotaloid and biseriate) have been reported from most of the samples.

Thirteen surface samples (soil and water) have been pollen analysed. A chart showing the frequency of each Taxon has been constructed. The study has revealed the dominance of Gramineae followed by Cheno/Ams type of pollen and Leguminosae. Other genera represented sporadically are *Prosopis*, Compositae, Umbelliferae, Acanthaceae etc.

Dumas (Dirtrict Surat).

Sixteen samples from Dumas were pollen analysed and proved to be palynologically barren. The sporadic occurrence of Gramineae, Cyperaceae, Cheno-Amaranth type. Compositae, *Holoptelea*, *Prosopis* etc. have been noticed. Microforminifera of both types—biseriate and Rotaloid were seen in the samples 33, 35 and 40.

Eleven soil samples collected while on way from Dumas to Malvan have been pollen analysed. Most of the samples are palynologically barren except for Samples No. 7 in which more than 300 pollen grains could be encountered. Sample No. 8 on the other hand is quite rich in microforaminifers though pollen grains were almost absent.

Malvan.

During pollen analytical investigation of Quaternary deposits of Malvan, some well preserved subfossil fungal spore were encountered along with pollen grains. They were studied, photographed and are finally ready for publication.

6. 2. 7. *Nepal.*

Thimi : One profile from Thimi (seven samples) has been pollen analysed. This study has revealed that arboreal vegetation is represented by high values of *Quercus* followed by *Pinus*. The other three elements such as *Cedrus, Picea, Abies, Myrica* and *Betula* are sporadically present. The herbage is dominated by grass pollen, *Artemisia* and Cheno—Amaranth type of pollen. Colonies of *Botryococcus* are encountered from Sample nos. 41 and 42. A few seeds of Cyperaceae have been recognised in the residue.

Kalimati—Intervening samples from Kalimatti pollen profile were analysed and pollen diagram prepared.

Manihara—Pollen diagram from Manihara profile is redrawn.

Pollen analysis of 21 surface samples (soil and water) from Kathmandu Valley was completed and pollen spectra constructed. Table representing frequency for each taxon was also prepared. The study of these spectra has revealed the dominance of *Pinus roxburghii* followed by *Quercus*. Other three elements represented in most of the spectra are *Alnus*, Myrtaceae and Betula. Harbaceous vegetation is dominated by Gramineae followed by Cheno-Amaranth type of pollen. The pollen of Cyperaceae and Compositae is reported from most of the samples though in less frequency.

Also four peat samples from Banipa, Thimi, Kalimatti and Dakshin Kali have been pollen analysed. Macroscopic study, however, reveals the occurrence of few seeds of *Scirpus* and *Carex*.

6.3 Archaeobotany.

6.3.1 *Harappan Plant Economy.*

Surkotada, Kutch, Gujarat (2000 BC-1660 BC)

Reinvestigation of the carbonised plant remains from Surkotada site suggests the presence of *Setaria italica* and *Setaria viridis* rather than Ragi. *(Eleusine coracana)* as referred to earlier.

Kalibangan, Rajasthan (2000 B.C)

Two samples KLB2/XA17-17 consist of an enormous quantity of carbonised grains of Barley (*Hordeum* sps.) Sample no 3 KLB 2/AAB (16) consists of three entire carbonised seeds of Gram (*Cicer arietinum*)

The Terracotta cakes in sample Nos. 7 and 8 KLB-20, 566, KLB2/XBI (7) contain fragments of barley spikelets. Uniseriate tufts of hairs have been observed at the base of these spikelets and their cuticles are made up of wavy epidermal cells with stomata and silica bodies.

6.3.2 *Archaeobotanical and pollen analytical investigation at Purana Qila (New Delhi).*

The study of Archaeological bricks in Sample 19, belonging to the Gupta period has revealed the occurrence of impressions and compressions of rice spikelets. In the bricks in Sample Nos. 27, 41, 45 belonging to the NBP are compressions of rice spikelets, impressions of grass leaves, stems, grains of some millets and impressions of a dicot leaf have been noted.

The pollen analysis of bricks in Sample Nos. 45 (A) and 45 (B) has revealed the occurrence of the following pollen grains such as Gramineae, Labiatae, *Holoptelea integgrifolia* ; Cheno-Amaranths, Compositae, *Pinus* spp. fern spores and unidentified pollen terrads.

6.3.3 *Plant economy at Non Nok Tha (Thailand)*

The sample derived from layer (2) S_9 D-4 (Nam Phony F)

1966, consists of an impression of a Kernel tentatively identified as rice. In the same sample there are impressions and compressions of fragmentary rice spikelets. Impressions and compressions of rice-husks were also found in samples.

NPF 1966 S_9 C5A (7) NPF S_9 C5 L (F)

NPF 1966 S_9 DFL (10) NPF S_9 C5 (12)

6.4 *Aeropalynology*

Studies in atmospheric pollen grains and fungal spores at Lucknow have been completed after completing the drafting and photography work. The manuscript contains 57 tables 17 text-figures and a Lucknow map and the text is of about 360 pages.

7. RADIOCARBON DATING LABORATORY

Only a brief technical account of the progress in the construction of the different units required for the laboratory can be given at this stage since a sizable part of the equipments and materials is still awaited. The laboratory rooms are being furnished and are ready for full occupation.

7.1 Construction of Electronic Units

The Electronics Counting Units and Power Supplies are being constructed at the Physical Research Laboratory Ahmedabad and at the Tata Institute of Fundamental Research, Bombay as per the requirements of the Laboratory. Many electronic test equipments and power supplies have been procured. A damaged counting unit donated by the Tata Institute of Fundamental Research, Bombay, has been thoroughly repaired and is ready for use to test nuclear detectors to be made in the laboratory.

7. 2. Construction of Vacuum System

The vacuum system for Radiocarbon dating work has to be constructed completely out of glass. Various glass materials and glass blowing equipments have already been acquired. The trolley on which the glass manifolds will be constructed were reconditioned. A major part of the construction of glass system for sample combustion and carbon dioxide purification has already been completed.

7. 3. Construction of Lead Shield

The radioactive shield of lead and mercury chambers required for housing the C-14 proportional detector in order to obtain high sensitivity has been designed. The radioactive purity of various lead samples has been tested by the Tata Institute. The supplies of lead in brick form and mercury are awaited.

7. 4. Construction of High Sensitive Proportional Detector for Radiocarbon Dating work.

Professor H. Oeschger and Dr. H. H. Loosli of the Radiocarbon Laboratory of University of Bern have agreed to supply the first detector for the Laboratory. Machining diagrams for the detectors in three different designs have been obtained from various laboratories. The construction work of the detector will be taken up as soon as a small workshop is set up.

III. PAPER PUBLISHED

Following papers were published by the staff

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Idem (1973). *Partha* a new type of female fructification from the Lower Gondwana of India. *Ibid.* **20** (3) : 356-360.

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IV. FIELD WORK

1. Two members of the Palaeozoic Department visited : (i) Chaibasa and adjoining areas for the collection of Dolomite rocks for the recovery of micro-organisms of Pre-Cambrian age. (ii) Lower Gondwana exposures of Raniganj Coalfield for megafossil. (iii) Lower Gondwana exposure of Auranga Coalfield for megafossil and samples for microfossil study.

2. An excursion was undertaken by a member of the Mesozoic Palaeobotany Department for collection of Triassic megafossils, petrified wood and palynological samples from the South Rewa Gondwana Basin, Madhya Pradesh.

3. Two members of the Cenozoic Department went on an excursion to Siwaliks exposed near Nahan and neighbouring areas. They visited Dhaula Kuan, Uttamwala, Saketi, Kala Amb, Mogi Nand and Nahan and made a good collection of fossil woods and palynological samples.

4. One member of the Coal Department visited Regional Coal Survey Laboratories at Nagpur and Bilaspur for coal samples from drillings in Pathkera and korba Coalfields.

5. Three members of the Coal Department visited the following areas :

(i) *Talchir Coalfield* - A collection was made from the rocks exposet in various localities representing the Talchir to Panchet of this area.

(ii) *Cuttack* - Coaly shales exposed in Sedheshwar Hill, West of Cuttack representing the Athgarh Stage, were collected.

(iii) *Raniganj Coalfield* - Sediments exposed in Noonia Nala, Noonia Khal and Machkandha Jhor, representing Raniganj to Panchet transition were collected.

6. Three members of the Oil Department visited the Kutch area to check the mapping data of the Madh Formation.

7. Two members of the Oil Department undertook field excursion to Simla Hills in collaboration with the Geological Survey of India party to collect stratigraphically located samples from measured sections of the Narag-Sarahan and Baroti-Kumarhatti road sections. Some other localities were also visited for collecting the rock samples.

8. Two members of the Oil Department and one from the Oil India Ltd. visited the field areas of Namphuk, Mamchik and Mio in Arunachal Pradesh and Tipang Pani in Tirap district of Upper Assam for collecting the palynological rock samples from 10th December to 4th January, 1974.

9. Two members of the Oil Department attended the Geological Survey of India Officers training camp from 10th October, 1973 to 19th January, 1974. They received training in topographical surveying, photogeology, quaternary geology, engineering geology, mapping of sedimentary and metamorphic rocks, ground-water geology, planetable surveying, geochemical prospecting, geophysi-

cal prospecting, section measurement and economic geology at Raipur, District, Dehradun and Olora, District, Mirzapur. Besides excursions were also made to Uttarkashi and Singrauli areas.

V. SPONSORED/COLLABORATIVE RESEARCH

A. Palaeozoic Department

Lower Carboniferous subsurface palynology from Libya

One bore-hole (A. 1-49) from Libya, ranging in depth from 1039 to 1452 meters (413 meters thick) has been investigated palynostratigraphically. The studies provide the first detailed knowledge of a mioflora closely comparable with the Tournaisan Vallatisporites Suite of the northern hemisphere. The mioflora (42 genera and 66 species) is divisible into two miofloral assemblage zones which encompass the whole Tournaisian, with a slight foreshadowing of Visean in the upper part of the borehole. The Libyan and other Southern hemisphere counterparts of the Vallatisporites-suite appear to be somewhat modified in their texture due to certain peculiar taxa of their own. A paper on this mioflora has been sent for publication (in collaboration with Compagnie Francaise des Petroles, France and Oil Palynology Department of the Institute.

B. Mesozoic Department

(i) Jurassic plant remains found at some new localities in the Jaisalmer District of Rajasthan have been studied in collaboration with O. N. G. C., Jodhpur. The plant fossils identified are ? *Gleichenites* sp., *Phlebopteris* sp., Frond type 1, *Ptilophyllum acutifolium*, *Otozamites imbricatus*, *Pterophyllum* sp., *Taeniopteris vittata*. *T. spatulata*, *Etatocladus conferta*, *Pagiophyllum* sp.

(ii) Study on the micro-and megaflora of the Jurassic in Central India has been started in collaboration with the Indian Statistical Institute, Calcutta. The mega-fossils and some of the miospore types have been photographed.

(iii) Collaborative research work is being carried out with the Geology Department, Revenshaw College, Cuttack, Orissa, on the fossil plants from the East Coast Gondwana.

(iv) Four exposures of the Damuda Group in the Brahmini Coalfield, Rajmahal Hills have been palynologically investigated in collaboration with Coal Palaeobotany Department. The miospore assemblage comprises 27 genera.

C. Cenozoic Department

Study of fossil woods from the Tertiary of Blue Nile Valley, Ethiopia, with Prof. Y. Lemoigne, University of Lyon, France, G.S.I., C.F.R.I., Coal Survey Labs., N.D.C.D., and N.L.C. organization. I.C.C.P., and I.C.P.

D. Oil Palynology Department

(i) Palynostratigraphical studies of the Tertiary Surface and subsurface rocks of Upper Assam. (Project supported by Oil India Ltd., Duliajan).

(ii) Palynological invetigations of the Palaeocene sediments of the Shillong Plateau (in collaboration with the Department of Applied Geology, Dibrugarh University).

(iii) Palynostratigraphy of Libyan Basin N-W. Africa. (completed).

(iv) Palaeopalynology of the Bedouri Bore-hole, Queensland, Australia (in colloboration with Compagnie Francais des petroles, Talence, France).

VI A. TRAINING PROVIDED TO OUTSIDERS

(i) Mr. Dinesh Chander Garg ...	Department of Geology Lucknow University, Lucknow.
(ii) Mr. Sumant Kumar Gupta...	do
(iii) Mr. M.S. Rawat ...	Botany Department, Govt. Degree College, Sehore.

VI B. TRAINING RECEIVED BY INSTITUTE STAFF

Sarvshri S.K. Kulshreshtha and N.C. Mehrotra of the Geology Section participated in the Officers 'Field Training Camp organized by the Northern Region of the Geological Survey of India from 11th October, 1973 to 12th January, 1974.

VII—TECHNICAL ASSISTANT TO OUTSIDERS

1.	Palynological consultation ...	Oil India Ltd., Duliajan, Assam.
2.	Identification of fossil woods and leaf-impressions from the Tertiary of Ethipoia and consultation of literature. ...	Prof. Y. Lemoigne, University of Lyon, France.
3.	Identification of structures looking like seeds. ...	Prof. M.K. Bhoi, Head of Botany Department, Laxmi Narayan College, Jharsuguda, Dist. Sambalpur, Orissa.

4.	Rocks from extra-peninsula Permian, for palynological informations.	Geology Department Roorkee University.
5	Archaeological and other materials.	Archaeological Survey of India. Deccan College, Poona Director, Archaeology and Museums, Rajasthan. President Forest Research Institute, Dehra Dun. Dr. V.M. Meher-Homji, Institute Francais, Pondicherry.
6.	Biopetrology of Lignite samples.	Neyveli lignite Corporation of India.
7.	Identification of some ... seeds from the Siwalik beds.	Shri Anil K. Mathur, Geology Department, Panjab University, Chandigarh.
8	Identification of leaf ... impressions.	Shri Mahesh Chandra, Geology Department, Banaras Hindu University, Varanasi.
9.	Identification of Mesozoic material and related palaeobotanical problems	Shri S. Singh and Shri N. P. Singh, Oil and Natural Gas Commission Jodhpur.

VIII-PAPERS AND LECTURES AT SYMPOSIA/ CONFERENCES/MEETINGS

1.	Indian Lower Gondwana Flora – A review.	K. R. Surange	III International Gondwana Symposium, Canberra.

2.	Morphographical evolution in gymnospermous pollen grains and its significance in stratigraphy	D. C. Bharadwaj	London University, Arizona University, Arizona State University, New Texas University and Pennsylvania State University.
3.	Recent trends in Botany-Palynology	do	61st Indian Sci. Congr. Nagpur.
4.	Palynology in Biostratigraphy and Palaeoecology of Lower Gondwanas in India.	do	6th Seminar of CAS in Geology, Chandigarh.
5.	Invited proposals for Nomenclature of lignite microconstituents.	do	International Commission, Lignite Nomenclature, Paris.
6.	Proposals for definition for genetic coal types.	do	International Commission of Coal Nomenclature, France.
7.	Inter - relationships of the palynoflras in Barakar Stage (Lower Gondwana) India.	do	IIIrd Indian Colloquium on Micropalaeontology and Stratigraphy, Chandigarh.
8.	Palynological composition of the basal Gondwanas in India.	do	Meeting held on November 5th, 1973 in the Honour of Prof. Ir. W. van Leckwijck, Bruxelles.

9.	A palynological reconnaissance of the Mesozoic sediments of Zaire.	M. N. Bose	VIth Colloque Africain de Micropalaeontologie, Tunis.
10.	Changing Economy in Ancient India.	Vishnu-Mittre.	Internat. Congress on Origins of Agriculture and IXth Internat. Conference of Anthropol Ethnol. Soc. Chicago.
11.	The archaeobotanical and Palynological evidence for the early origin of agriculture in south and southeast Asia.	do	IX Internat. Conf. Anthropol Ethnol. Sos. Chicago.
12.	Indian cultivated plants in space and time.	do	Department of Plant Introduction I. A. R. I., New Delhi.
13.	Palynostratigraphy of the Tertiary sediments of Assam with special reference to Oil exploration programme.	S.C.D. Sah	Annual meeting of the Palynological Society of India, Calcutta.
14.	Plant life through the ages.	do	Technical forum of Oil India Ltd., Duliajan.
15.	Fossil plants, their mode of preservation and methods of study.	do	Department of Geology and Geophysics, Roorkee University, Roorkee.

16.	Plant life through the ages.	do	do
17.	Plant fossils as indicators of palaeoenvironments.	do	do
18.	Palynology, a new tool in Oil exploration.	do	do
19.	Introduction to palaeobotany, kinds of fossils, modes of preservations and methods and techniques of study.	do	Advance Centre of Geology Punjab University Chandigarh.
20.	Origin and evolution of plant life through geologic ages.	do	do
21.	Plant distribution. migration and palaeoenvironmental interpretation.	do	do
22.	Palaeobotany in relation to stratigraphy and economic geology.	do	do
23.	Palynological collections and laboratory techniques.	do	do
24.	Palynology in the quest of Oil.	do	do

25.	Morphology and stratigraphic significance of Ariadnaesporites Potonie. 1956.	K. P. Jain R. Y. Singh and S.C.D. Sah.	IIIrd. Indian Colloquium on micropalaeontology and stratigraphy, Chandigarh.
26.	Elements of Glossopteris flora.	P.K.Maithy	Botany Deparment, Acharya Narendra Dev Mahila Maha Vidhyalaya, Kanpur.

IX REPRESENTATION ON COMMITTEES/ BOARDS

1.	Dr. K. R. Surange	...	Secretary, Editorial, Board, 'The Palaeobotanist'.
			Organizer, Working Group in Palaeobotany and Palynology of the International Union of Geological Sciences Sub-commission on Gondwana Stratigraphy.
			Member, Sub-commission, VIII International Congress of Carboniferous Stratigraphy and Geology under IUGS.
			Member, Sectional Committee (VI), Indian National Science Academy.
2.	Dr. R. N. Lakhanpal	...	Chief Editor "Geophytology" (until December, 1973).

		Member, Editorial Board, 'Palaeobotanist'. Member, Editorial Board, "Palaeontological Society of India".
3. Dr. D. C. Bharadwaj	...	Vice-President, International Committee on Palynology. Chairman, Organizing Committee, IV International Palynological Conference. Member, International Commission on Carboniferous Stratigraphy. Member, Editorial Boards of "Review of Palaeobotany and Palynology", "Palaeobotanist" and "Geophytology".
4. Dr. M. N. Bose	...	Member, Editorial Board "Palaeobotanist". Member, Committee Scientifique, VI Colloque Africain de Micropalaeontologie, Tunis. Member, Permo-Triassic Committee; VIth Colloque Africain de Micropalaeontologie, Tunis.
5. Dr. Vishnu Mittre	...	Member, Central Advisory Board for Archaeology (Govt. of India). Member, Advisory Board.

			World Pollen Flora. Co-Chairman for Internat. Congress on origins of Agriculture, IX Internat. Anthropol. Ethnol. Conference at Chicago, 1973. Convener, Sub-Committee, History of Biological Sciences in India for Indian National Committee for Internat. Union of History and Philosophy of Science, (IUHPS). Vice-Chairman, Organizing Committee, IV International Palynological Conference.
6.	Dr. S. C. D. Sah	...	Secretary General, Organizing Committee IV International Palynological Conference. Treasurer, College of the Fellows, Palynological Society of India. Founder Member, College of the Fellows of the Palynological Society of India.
7.	Dr. K. M. Lele	...	Chief Editor 'Geophytology'.
8.	Dr. G. K. B. Navale	...	Member, International Committee of Coal Petrology, Member, International

			Commission of Coal and Lignite Nomenclature. Member, International Commission of Coal and Lignite Analysis. Executive member,"Gondwana Committee" of International Coal Petrology. Executive member of Indian National Committee of Coal Petrology. Secretary, Organizing Committee IV International Palynological Conference.
9.	Dr. H. P. Singh.	...	Secretary, Organizing Committee, IV International Palynological Conference. Member, Executive Committee, The Palaeobotanical Society.
10.	Dr. K. P. Jain	...	Assistant Editor "Geophytology". Secretary, Organizing Committee, IVth International Palynological Conference.
11.	Dr. P. K. Maithy	...	Assistant Editor "Geophytology".
12.	Dr. H K. Maheshwari	...	Editor, Catalogue of Indian Fossil plants. Additional Secretary, Or-

			ganizing Committeee, IV International Palynological Conference. Editor "Geophytology"
13.	Dr. R. S. Tiwari	...	Joint Secretary "The Palaeobotanical Society". Additional Secretary, Organizing Committee of the IV International Palynological Conference.
14.	Dr. R. K. Kar	...	Assistant Secretary, Organizing Committee, IV Intetnational Palynological Conference. Member Executive Committee, The Palaeobotanical Soceity.
15.	Dr. H. P. Gupta	...	Additional Secretary, Organizing Committee, IV International Palynological Conference.

X. DEPUTATION/TRAINING/STUDY ABOARD

1.	Dr. R. K. Surange	...	*Canberra* (Australia) to attend III International Gondwana Symposium from 20th—25th August, 1973. Afterwards visited (i) The Australian Museum, Sydney, (ii) Bureau of Mineral Resources, Canberra and (iii)Botanical Gardens, Singapore.

2.	Dr. D. C. Bharadwaj ..	*Boussens* (France), to attend C. I. M. P meeting and Symposia from 12—15th September, 1973. Thereafter spent 4 weeks in U. K. visiting Museums and Research centres at the invitation of British Council and finally attended AASP meeting at Anheim (California) U.S.A.
3.	Dr. M. N. Bose .	*Tunis*, to attend the VI Colloque Africain de Micropalaeontologie from 21 March to 3 April, 1974
4.	Dr. Vishnu Mittre ...	*Chicago*, to attend IX International Congress of Anthropological and Ethnological Sciences from 28 August, 1973 to 9 September, 1973.

XI. FOUNDER'S DAY CELEBRATIONS

(1) The Founder's Day was celebrated on 14th November, 1973 the birth day of Professor Birbal Sahni, F. R. S.

In the morning wreaths and flowers were placed on the Samadhi of Professor Birbal Sahni.

The evening function started at 5.00 P M. Dr. M. L. Dhar, F. N. A. Director, Central Drug Research Institute, Lucknow, was the Chief Guest at the well attended function.

Professor T. S. Sadasivan, Chairman, Governing Body welcomed the Chief Guest and other distinguished persons and guests

At 5.45 p. m. Professor Wilson N. Stewart, Professor of Botany, University of Alberta, Edmonton, Canada, delivered the 21st Sir Albert Charles Seward Memorial Lecture entitled "Primary xylem, pteridosperms and the pteropsida."

Professor K. R. Surange, Director thanked the guests.

(2) Professor D. D. Pant, F. N. A., Head of the Botany Department, Allahabad University, Allahabad, delivered the 3rd Professor Birbal Sahni Memorial Lecture entitled "The theory of Continental Drift in the light of recent researches" on Thursday the 15th November, 1973 at 5.30 p m. at the Birbal Sahni Institute of Palaeobotany, Lucknow.

(3) Professor B. M. Johri, F. N. A., Department of Botany, University of Delhi delivered the 3rd Silver Jubillee Commemoration Lecture entitled "Biology of the mistletoes" on 16th November, 1973, at 5.30 p.m. in the Auditorium of the Birbal Sahni Institute of Palaeobotany, Lucknow.

XII PUBLICATIONS

1. The Journal — *The Palaeobotanist.*

   (a) Volum 20, number 1 to 3, were published during the year.

   (b) Volume 21, number 1, is in page proof stage and Volume 21, number 2 in galley proof stage.

   (c) Volume 21, number 3 is also with the press and galley proofs are awaited.

2. Seward Memorial Lecture

The XIX lecture was received from the Press and the

XX lecture "The water ferns – their origin" by Prof. T. S. Mahabale is in page proof stage.

3. Birbal Sahni Memorial Lecture

The first lecture was received from the Press. The second lecture by Prof. T. A. Bennet Clark was not received from the Author. The third lecture "The theory of Continental Drift in the light of recent researches" by Prof. D D. Pant has been sent to the Press.

4. Silver Jubilee Lecture

The first lecture was received from the Press. The second lecture on "Plants & Man" by Dr. B. K. Janaki Ammal is in page proof stage.

5. Symposia Numbers

The following five Symposia numbers were sent to the Press :—

(a) Origin & Phytogeography of angiosperms.

(b) Morphological and Structural Palaeobotany.

(c) Stratigraphical Palynology.

(d) Structure, nomenclature & classification of Pollen & Spores.

(e) Late quaternary vegetational development in extra European areas

Of the above (a) has been published ; (b) is in page proof stage and (c), (d) and (e) are in galley proof stage These are being published as "Special Publications of the Birbal Sahni institute of Palaeobotany."

6. Proceedings of the Autumn School

This is being published in a book form entitled "Aspects & Appraisal of Indian Palaeobotany". There are sixty-seven contributions. This publication is also in page proof stage.

7. Annual Reports

The Annual Report for the year 1972-73 was printed and distributed.

8. Sale

During 1973-74 an income of Rs. 30,075.82 was registered from sale proceeds of the Institute's publications. This sum includes the following foreign exchange earned : —

U. S. $.	...	2,197.84
D. M.	...	96.97
£.	...	79.95

XIII. LIBRARY

1. Statement showing the details of stock for the year 1973-74.

S. No.	Details	Position as on 31.3.73	Added during 1973-74	Total
1.	Books	2,615	117	2,732
2.	Issue of Journals	5,694	160	5,854
3.	Reprints	31,230	339	21,569
4.	Microfilms	194	13	207

2. **Exchange :**

(i) Number of papers purchased for exchange.	36
(ii) Number of papers received as gift from Dr. R.V. Sitholey.	1036
(iii) Number of papers received as gift from Prof. K.N. Kaul.	123
(iv) Total number of reprints sent out on exchange.	1,842
(v) Number of individuals on exchange.	290
(vi) Number of Institutions on exchange.	63
(vii) Sets of papers of Prof. Birbal Sahni sent out.	7

3. **Requests for exchange received from the following Institutions :**

(i) Geologicky Ustav SAV
Stefanikova 41,
Bratislava, *Czechoslovakia.*

(ii) Instituto di Geologia E Paleontologia,
Dell' Universita Degli Studi,
Piazxale Delle Scienze-00100,
Roma.

(iii) University of Tananarive,
Exchange Service,
Bibliothique Universitaire,
Tananarive, B.P. 908.
Tananarive, LE, *MADAGASAR.*

(iv) Tashkent Abdulli Tukaeva I,
Fundamentalanaja Biblioteka,
Akademia Nauk Uz SSR,
Mezdunarodnij Knigoobmen, *USSR.*

4. Visitors to the Library.

As usual a number of research students and scientists visited the Institute to consult the latest literature in Palaeobotany and its allied topics available in this Library. Books, Journals and reprints were loaned to the following organisations :

(i) Oil India Ltd.,
Duliajan (Upper Assam).

(ii Botany Department,
Lucknow University, Lucknow,

(iii) Botany Department,
Allahabad University Allahabad

(iv) Central Plantation Crops Research
Institute, Karnatak, India.

5. Display :

(i) To promote closer acquaintance with the current scientific literature to the scientists, the new arrivals were displayed on every first working day of the week.

(ii) The book jackets of the latest purchases among the books were kept on the display board, which are replaced with new arrivals.

(iii) *Current Awarenees Service* – This year a totally new technique of reader service wsa started, which is known as CURRENT AWARENESS SERVICE under which the paper cuttings of the latest development in the field of Palaeobotany and allied subjects are displayed.

6. Maintenance.

A large number of out of print and rare books and perio

dicals were reconditioned. The covers on many of the reprints were replaced.

7. Reprographic activities.

Multiple copies of some important out-of-print publications and some important official documents were made by the Panaprint Electrostatic Photocopying Machine.

8. Subject Catalogue.

All the articles in various publications received during the year were given their appropriate place in subject catalogue cards by providing suitable heading. In addition, more title and cross reference cards were also made.

9, Improvements :

(i) *Book Numbers*—This year a new system has been introduced for arranging books on the Shelves. In this system the books are arranged under broad subjects by their numbers written clearly on a lable which is pasted on the spine of the book provided to every document, based on the Surnames of the authors. Cutter-Senborne tables are followed for the above purpose.

(ii) *Circulation*—So far, for circulation of books and periodicals the register system was followed, in which the list of books and periodicals were being issued under the name of the scientists.

This year to save the precious time of the scientists, a new system of circulation has been introduced. In this system, instead of making entries on different pages of a register, cards have been prepared for each book, reprint and journal. Entries of issue and return are made on these cards much more quickly. This system also facilitates instant checking of items issued to individuals, borrowers and their due dates of return.

XIV. MUSEUM

A. Exhibition Halls :

1. Geology Hall (Hall No: 1)—

All the specimens and slides on exhibition have been properly catalogued. Efforts are in progress to have for each show case a cyclostyled booklet containing all informations about its exhibits. Labels and legends of the Quaternary show cases have been replaced with new ones.

2. Botany Hall (Hall No. 2)—

All exhibits of this hall have also been catalogued. The preparation of cyclostyled booklets for individual show cases is nearing completion, As the steel cabinets containing the type and figured specimens are still lying in this hall, it still remains closed to the visitors.

B. Fossil Store Hall (Hall No. 3) :

The hall has been repaired and refloored. The fossil material which was removed out last year has been shifted back to this hall. The specimens have now been arranged department-wise. Printed labels have been prepared, to be fixed on the racks to indicate year of collection, Horizon, Locality and the name of the field party or the individual.

C. Type and figured specimens/slides etc :

The type and figured specimens/slides are still stored in Prof. Sanni's room. Their number as on 31.3.74 is ;

(i) Type and Figured specimens	...	1144
(ii) Type and Figured Slides	...	4618
(iii) Negatives of type and Figured specimens.	...	3307

D. New Collections :

During this year collections were made from about 15 localities of India by the Institute staff.

(i) Palaeozoic	...	230 specimens and amples
(ii) Mesozoic	..	150 specimens and (appr.) samples. (,,)
(iii) Oil Department	...	292 samples (,,)
(iv) Cenozoic	....	25 samples (,,)
Total	...	701

E. Specimens received for investigation :

(i) Palaeobotanical report of five petrified woods from Thailand has been sent to Mr. Swat Nichart Chief, National Park Section, Royal Forest Department, Bangkok-9, Thailand.

(ii) A palaeobotanical and palynological report on one specimen received from the Deputy Director General, G.S.I. Northern Region, Lucknow for investigation has been sent to him.

F. Presentation of duplicate fossils.

Duplicate plant fossil specimens were sent to following :

(i) Prof. Yves Lemoigne,
Laboratoire de Palaeobotanique,
Frances.

(ii) Dr. S.K. Dutta,
Department of Applied Geology,
Dibrugarh University, Dibrugarh, Assam.

(iii) Shri Sushil Sarkar,
Director of Arts,
Govt. Museum and Arts Gallery, Chandigarh.

(iv) Prof. I.C. Pande,
Director, Centre of Advanced Study in Geology,
Department of Geology, Chandigarh –160014.

G. Presentation to the Museum.

Mr. B. Weber, 8023 Dresdon, Braunschweiger Str. 4, G.D.R. has presented 6 plant fossil specimens from Miocene stage of G D.R.

H. Natural History Museum, New Delhi :

Specimens are being sorted out for donation to this museum.

XV. HERBARIUM

Herbarium Specimens

Addition of Plant specimens during the year..... 213
Total number of Plant specimens as on 31.3.74.....9426

Fruits and Seeds

Addition of fruits and seeds during the year... 225
Total number of fruits and seeds as on 31.3.74.. 921

Woods

Addition of wood samples during the year.. 168
Total number of wood samples as on 31.3.74..... 2571
Total number of wood slides as on 31.3.74.. 1877

Pollen Slides

Total number of Pollen slides as on 31.3.74 ... 8022

Other Slides

Total number of slides as on 31.3.74 ... 4632

In connection with the identification of plant specimens three tours were undertaken by Herbarium staff, to Central National Herbarium, Howrah ; Central Circle, B. S. I , Allahabad and F R. I. and N. C. B. S. I., Dehra Dun. In total about 514 plant specimens were identified during the year. Besides, 30 different species important as herbarium representatives were collected from Howrah, W. Bengal and F. R. I. Dehra Dun, U. P. Exchange relations of herbarium specimens were established with the National Botanic Gardens, Lucknow, Forest Research Institute, Dehra Dun and Central Circle, Botanical Survey of India, Allahabad. Two sets of 50 specimens each were sent to the two former institutions and 36 plant specimens were received from the last institution.

Through the Head, Quaternary Palynology Department 199 seed specimens were received from Indian Agricultural Research Institute, New Delhi ; Forest Research Institute, Dehra Dun ; Indian Grass and Fodder Research Institute, Jhansi, U. P. Gifts of seeds and fruits were also received from National Botanic Gardens, Lucknow and Forest Research Institute, Dehra Dun.

Fifty wood samples were received on payment from the Forest Research Branch, Sandakan, Sabah, Malayasia. Twentysix and Ninetytwo wood specimens were received in exchange, respectively from the Forest Product Research Division, Royal Forest Department, Thailand and Forest Research Institute, Pretoria, S. Africa. A few sets of Indian wood specimens meant for exchange were cut into standard size, and planed, to be sent to the parties who had demanded it. Two hundred twelve wood slides were received from the Cenozoic Palaeobotany Department of our institution. These slides have been incorporated in the Xylarium section. Six Palm wood and frond slides were given on loan to Dr. B. S. Trivedi, Potany Deptt., Lucknow University, Lucknow.

Indexing of pollen slides was also undertaken this year and almost half of the work was completed. Further, work was stopped due to non-availability of Index cards. Seventeen pollen slides were issued for study to Palynology section, National Botanic Gardens, Lucknow.

Index cards of the plant specimens of general herbarium of the following families were prepared. Acanthaceae, Amarantaceae, Ampelidaceae, Anacardiaceae, Annonaceae, Apocynaceae, Araliaceae, Aristolochiaceae, Asclepediaceae, Balanophoraceae, Begnoniaceae, Borberidaceae, Bignoniaceae, Bixineae, Boraginaceae, Burseraceae, Cactaceae, Capparidaceae, Caprifoliaceae, Caryophyllaceae, Casurinaceae, Celastraceae, Ceratophyllaceae, Chenopodiaceae, Combretaceae, Compositae.

Two members of the herbarium remained busy for 6 months, half day in the Library for physical verification.

On 19th February 1974 A. K. S. Rathore joined as Herbarium Assistant. Shri R. S. Ojha joined on 28th March, 1974 as Plant Collector.

A new section "The Phyllothek" of leaf collection in the herbarium has been started. The leaf collection would not only represent the shapes and sizes of leaves of different taxa but also give a clear picture of venation pattern. In each case the epidermis and mesophyll of the leaf are removed by chemical treatments and the skeleton of the leaf formed of veins is mounted on a slide. A few samples of cleared leaf have already been prepared and the results are encouraging. This section will be more useful in matching the leaf impressions of fossils taxa.

XVI. BUILDING

Apart from general maintenance of Building the following construction work was completed :—

1. Construction of Carbon Dating Laboratory I Phase, including electric and sanitary fittings and fixtures.

2. Construction of 6 Laboratory rooms including electric and sanitary fittings and fixtures.

3. Reflooring of the Palaeozoic Department laboratory.

In addition the following petty works were also done :

(i) Aluminium strips fixed to Stairs leading to basement.

(ii) Providing 4 Jali doors to Guest House.

(iii) Redistempering of the entire Guest House

(iv) Pucca Dust Bin behind the Institute Building.

(v) Providing two bath rooms for servant quarters.

(vi) Providing one closed Nali for the garden.

2. Garden

About 150 roses were propagated in the Institute's Campus by means of budding out of a which 80 survived. 40 were transferred from the rose bed to different sites of the Institute.

Some Crotons were also propagated.

40 cuttings of Bougainvillea were also transferred in pots.

XVII. VISITORS

1. Distinguished persons

Dr. Md. Sirajul Islam,
Educational & Cultural Councillor,
Bangladesh High Commission,
New Delhi.

Mr. S. Kisch,
Research Associate,
Florida University, U.S.A.

Prof. William Schopf,
Deptt. of Geology, University of California,
Los Angles, California, U.S.A.

Prof. Y. Lemoigne.
Lyon, France.

Dr. A.S. Lopukhin,
Geological Institute of the Academy of
Sciences of Kirghiz, S.S.R., Frunze, U.S.S.R.

Prof. B.M. Johri,
Head, Botany Department,
Delhi University, Delhi.

Prof. N.S. Wulfron,
Institute for Chemistry of Natural Products,
U.S.S.R. Academy of Sciences,
Ul. Vovilove, Moscow, U.S.S.R.

Prof. Wilson N. Stewart,
University Alberta, Edmonton, Canada.

Dr. Mrs. G. Delle,
Komarov Bot. Instt.,
Leningrad, U.S.S.R.

Prof. T. Delevoryas,
University of Texas,
Houston, Texas, U.S.A.

Dr. J.V. Rodricks,
Washinglon, D.C., U.S.A.

Prof. P.B. Bradley,
Prof. of Pharmocology, Medical College.
University of Birmingham, U.K.

Shri O.P. Agarwal,
Chief Chemist & Head Central Conservation Lab.,
National Museum, New Delhi-11.

Dr. Md. Shamsul Haq.
Geological Survey of Bangla Desh,
Dacca.

Dr. Irfan Ali,
Bangla Desh C.S.I.R., Dacca.

Mr. Mesbahuddin Ahmad,
University Grants Commission,
Dacca.

Dr. Z. Kvacek.
Praha, Czechoslovakia.

James WilliamBeeston,
Coal Petrological Laboratory,
Geological Survey, Queensland,
Australia.
Edward Street,
Brisbane, Australia.

Mr. A.K. Mathur,
Jr. Research Fellow, Geology, Deptt.,
Punjab University, Chandigarh.

Flt. Lt. Mrs. & Mr. Issar,

Mr. S.K. Sharma,
Botany Department, D.A.V. College,
Muzaffarnagar.

Mr. Rajendra Nath Tripathi,
G.S.V.M. Medical College, Kanpur,

Mr. Pradeep Kumar Verma,
Botany Department, Darjeeling Govt. College,
Darjeeling.

Miss Rita Khandelwal,
Kanpur.

Lt. Col. S.P. Bhargava,
A,C.C. School, Jabalpur.

Mr. P.K. Jain,
Shojapur, M.P.

Mr. Vijay Pande,
Indore.

Mr. Ram Batan Singh,
Baikunthpur, Bihar.

Mr R.N. Srivastava,
Palaeontologist I/C(NR),
G.S.I., Lucknow.

Mr. Y.R. Chaddha,
Council of Scientific & Industrial Research,
New Delhi.

Mr. S.N. Kulshreshtha,
Mohanpur Road, Meerut.

Mr. Surendra Narain Kulshrestha &
Capt. J.P. Kulshrestha,
Lucknow.

Mr. Ved Prakash Agnihotri,
I.I.T. Kanpur.

Mr. L.P. Lall,
Vice-Principal,
D.C.S.K. Degree College,
Maunath Bhanjan, Azamgarh.

Mr. Anil Kumar Kulshrestha,
148-C, Muzzaffarnagar.

Mr. J.V.S. Singh,
K.G. Singh & R.N. Singh of Jalaun.

S. Moitra, Candelarea,
Dadar, Bombay.

Shri P.G. Gupta,
Curator, National History Museum,
New Delhi.

Km. Bharti Chatterjee,
Artist, Natural History Museum,
New Delhi.

2. Educational and other Institutions

Department of Botany, S.G.N. Khalsa College,
Sri Ganganagar, Rajasthan.

Regional College of Education, Bhuvaneshwar.

Department of Botany, Gauhati University,
Gauhati.

Botany Department, P.G.V. College, Gwalior.

D.M. College, Imphal (Assam).

University School of Science, Gujrat
University, Ahmedabad.

Botany Department, Arya Vidyapith College,
Gauhati, Assam.

Shri H.L. Della and Party, B.N. College, Dhubri, Assam.

Shri H.L. Das and Party, Contai, West Bengal.

Department of Botany, Patna University, Patna.

Department of Botany, Udaipratap College, Varanasi.

Botany Students of Saugor University, M.P.

Botany Department, Gaya College, Gaya (Magadh University).

Students of Janta Inter College, Alambagh, Lucknow.

Botany Department, Institute of Science, Nagpur.

Botany Department, C.M.P. Degree College, Allahabad.

Department of Geology and Geophysics, University of Roorkee, Roorkee.

Geology Department, Lucknow University, Lucknow.

Department of Geology,
Motilal Mahavidyalaya, Bhopal.

Botanical Association, Attarrah College, Attarrah, Dist. Banda.

Department of Botany, G.F. College, Shahjahanpur.

XVIII. THE GOVERNING BODY, FINANCE & BUILDING COMMITTEE AND SCIENTIFIC PROGRAMMING & EVALUATION COMMITTEE.

1. The Governing Body

CHAIRMAN

Professor T.S. Sadasivan,
"Gokulam", 54, M.K.A. Koil St.,
Madras-600004.

MEMBERS

Mrs. Savitri Sahni,
686, Birbal Sahni Marg,
Lucknow.

Director,
Botanical Survey of India,
14, Madan Street,
Calcutta-13.

Professor D.D. Pant,
Head of the Botany Department,
University of Allahabad.
Allahabad.

Professor Uma Shanker Srivastava,
Professor of Zoology,
University of Allahabad,
Allahabad.

Dr. A. Ramachandaran,
Secretary to the Govt. of India,
Department of Science & Technology,
Technology Bhavan, New Mehrauli Road,
New Delhi-110029.

Professor A.R. Rao,
No. 2, XI Main Road, 3rd Block,
East Jayanagar,
Bangalore-II.

Shri M.K. Venkataraman,
Dy. Financial Adviser (Science & Technology)
CSIR Building, New Delhi.

Director-General,
Geological Survey of India.
27, Jawaharlal Nehru Road,
Calcutta-13.

Professor T.S. Mahabale,
Maharashtra Association for the
Cultivation of Sciences,
Law College Road,
Poona.

Director-General,
Archeological Survey of India,
New Delhi.

Shri A.B. Das Gupta,
Managing Director,
Oil India Ltd,
17, Parliament Street,
New Delhi-1.

Vice-Chancellor,
Lucknow University,
Lucknow.

Professor K.R. Surange,
Director,
Birbal Sahni Institute of Palaeobotany,
Lucknow. (Member—Secretary).

Shri Gurcharan Singh.
Registrar,
Birbal Sahni Institute of Palaeobotany,
Lucknow. (Non-member Asstt. Secretary).

2. Finance & Building Committee

CHAIRMAN

Professor T.S. Sadasivan,
"Gokulam", 54, M.K.A. Koil St.,
Madras-600004.

MEMBERS

Professor D.D. Pant,
Head of the Botany Department,
University of Allahabad,
Allahabad.

Shri M.K. Venkataraman,
Dy. Financial Advisor (Sc ience and Technology),
CSIR Building, New Delh i.

Representative,
Department of Science and Technology,
New Delhi.

Chief Engineer, or his Nominee,
State P.W.D. U.P.
Lucknow.

Shri Naresh Kochar,
Kochar and Associates,
16, Vidhan Sabha Marg, Lucknow.

Professor K. R. Surange,
Director,
Birbal Sahni Institute of Palaeobotany,
Lucknow.

3. Scientific Programming and Evaluation Committee

CHAIRMAN

Professor K.R. Surange,
Director,
Birbal Sahni Institute of Palaeobotany,
Lucknow.

MEMBERS

Professor A.R. Rao,
No. 2, XI Main Road, 3rd Block,
East Jayanagar,
Bangalore-11.

Professor D.D. Pant,
Head of the Botany Department,
University of Allahabad,
Allahabad.

Dr. R.N. Lakhanpal,
Head of the Cenozoic Palaeobotany Department,
Birbal Sahni Institute of Palaeobotany,
Lucknow.

Dr. D.C. Bharadwaj,
Head of the Coal Palaeobotany Department,
Birbal Sahni Institute of Palaeobotany,
Lucknow.

Dr. M.N. Bose,
Head of the Mesozoic Palaeobotany Department,
Birbal Sahni Institute of Palaeobotany,
Lucknow.

Dr. Vishnu Mittre,
Head of the Quaternary Palynology Department,
Birbal Sahni Institute of Palaeobotany,
Lucknow.

Dr. S.C.D. Sah,
Head of the Oil Palynology Department,
Birbal Sahni Institute of Palaeobotany,
Lucknow.

Dr. G. Rajagopalan,
Head of the Carbon Dating Laboratory,
Birbal Sahni Institute of Palaeobotany,
Lucknow.

XIX THE STAFF

Director

Professor K. R. Surange, M. Sc , Ph. D. (Lucknow),
Ph. D. (Cantab), F. Pb. S., F. N. A.

Department of Palaeozoic Palaeobotany

Dr. K. M. Lele, M. Sc., Ph. D.
Dr. P. K. Maithy, M. Sc., Ph D.
Dr. Mrs. Shaila Chandra, M. Sc., Ph. D.
Dr. Mrs. Rehana Makada, M. Sc., Ph. D.
Shri A. K. Srivastava, M. Sc.
Shri Manoj Shukla, M. Sc. (J.S.A. Since 13.2.74)
Miss Reshma Bijlani, M. Sc. (Research Scholar)

Department of Mesozoic Palaeobotany

Dr. M. N. Bose, M. Sc., Ph. D., F. Pb. S. Head
Correspondent de l'arsom
Dr. Sukh Dev. M. Sc. (Hons.), Ph. D. (Lucknow)
Ph. D. (Reading).

Dr. H. K. Maheshwari, M. Sc., Ph. D.
Dr. Shyam C. Srivastava, M. Sc. Ph. D.
Miss Jayasri Banerjee, M. Sc. (S. S. A. Since 1.5.73)
Shri K. P. Navneeth Kumaran, M. Sc (J. S. A. Since 1. 3. 74)
Miss Zeba Bano, M. Sc. (Research Scholar till 11. 3. 74 and J. S. A. Since 12. 3. 74).

Department of Cenozoic Palaeobotany

Dr. R. N. Lakhanpal, M. Sc., Ph. D., F. Pb. S., F. B. S., F. N. A. Sc. — Head
Dr. U. Prakash, M. Sc., Ph. D.
Dr. N. Awasthi, M. Sc. Ph. D.
Dr. M. B. Bande, M. Sc., Ph. D.
Shri K. Ambwani, M. Sc., (J. S. A. Since 10. 5. 73)
Shri Jaswant Singh Guleria, M. Sc. (Research Scholar Since 18. 2. 74)

Department of Coal Palaeobotany

Dr. D. C. Bharadwaj, M. Sc. Ph. D. (Lucknow) Dr. rer Nat. (Bonn), F. B. S., Pb. S. — Head
Dr. G. K. B. Navale, M. Sc., Ph. D., F.G.S., B.G.M.S.
Dr. R. S. Tiwari, M. Sc., Ph. D.
Dr. Suresh C. Srivastava, M. Sc., Ph. D.
Dr. Anand Prakash, M. Sc., Ph. D.
Dr. Pramod Kumar, M. Sc., Ph. D.
Shri B. K. Misra, M. Sc.
Miss Archana Dwivedi, M. Sc.
Miss Vijaya Rana, M, Sc. (Research Scholar)

Department of Quaternary Palynology

Dr. Vishnu Mittre, M. Sc., Ph. D. (Lucknow) Ph. D. (Cantab) — Head
Dr. H. P. Gupta, M. Sc., Ph. D.

Dr. Chhaya Sharma. M. Sc., Ph. D.
Miss Asha Khandelwal, M. Sc.
Miss R. Savithri, M. Sc. (Research Scholar till 11.3.74 and J.S.A. Since 12.3.74)

Department of Oil Palynology

Dr. S. C. D. Sah, M. Sc., Ph. D. Head
Dr. Haripal Singh, M. Sc., Ph. D.
Dr. K. P. Jain, M. Sc. Ph. D.
Dr. R. K. Kar, M. Sc. Ph. D.
Dr. R. Y. Singh, M. Sc. Ph. D.
Shri R. K. Saxena, M. Sc.
Shri A. K. Khanna, M. Sc. (Research Scholar till 11.3.74 and J.S.A. Since 12.3.74)

Geology Section

Shri S. K. Kulshreshtha, M. Sc.
Shri N. C. Mehrotra, M. Sc.

C-14 Laboratory

Dr G. Rajagopalan, Ph. D. (Geophysicist Since 23.5.73)

ADMINISTRATION

Shri Gurcharan Singh, M. A. (Registrar since 16.4.73)
Shri V. P. Gulati (Deputy Registrar)
Shri S. D. Mehtani (Office Assistant)
Shri S. K. Suri (Stenographer)
Shri S. P. Chadha, B. A. (P. A. to Director)
Mrs. P. K. Srivastava (Receptionist)
Shri H. S. Srivastava, B. Com. (U. D. C.)
Shri Bhagwan Singh (U. D. C.)
Shri I. J. S. Bedi (Steno-typist)
Shri Ramesh Chandra (L. D. C)
Shri R. K. Kapoor (L. D. C. Since 9. 2. 73)
Shri K. Devrajan (L.D.C. Since 13. 2. 73)

ACCOUNTS

Shri Ghanshyam Singh. B. Com. (Accounts Officer)
Skri S. B. Verma, M A., B. Com, D. P. A. (Accountant)
Shri T. N. Shukia, B. A. (U. D. C)
Shri B. K. Jain, B. A. (U. D. C.)
Shri N. N. Joshi (L. D. C.)
Shri R. K. Takru, B. A. (L.D.C.)

PUBLICATION

Shri N. N. Moitra, B. A. (Publication I/C. till 21. 2. 74 & Asstt. Editor Since 22. 2. 74)

Library

Shri J. N. Nigam, B. A , B. Lib. (Librarian)
Mrs. Y. Ahmad, B. A., B. Lib. (Library Asstt. from 22.6.73 to 1.3.74)

Museum

Dr. Anil Chandra, M Sc. Ph. D. (Curator)
Shri T. S. Mohan Shanker, B. Sc. (Museum Asstt.) on lien.
Shri N. C. Saxena, B. A. (Offg. Museum Asstt.)
Shri J. C. Srivastava, M. Sc. (Offg. Juniour Museum Asstt.)

Herbarium

Dr. H. A. Khan, M. Sc., Ph. D. (Curator)
Shri G. P. Srivastava, M. Sc. (Herbarium I/C.)
Shri Diwakar Pradhan, B. Sc. (Herbarium Asstt.)
Shri A. K. Singh Rathore, B. Sc. (Herbarium Asstt. since 1.2.74).
Shri R. S. Ojha (Plant Collector since 28.3.74)

Laboratory Services

Shri R. C. Gupta, M. Sc. (Junior Technical Asstt.) till 26.12.73.
Shri D. C, Joshi, B. Sc. (Junior Technical Asstt.)
Miss Asha Bharadwaj, B. Sc. ,,
Miss Madhavi Chowdhury, B. Sc. ,,
Miss Indra Kumari, B. Sc.
Shri H. N. Boral, B. Sc. ,,
Shri Raj Bir Singh, M. Sc. ,,
Shri B. Sekar, B. Sc. ,,
Miss Kamla Amarlal, B. Sc. ,,
(Scheme "Palynological Studies" from Oil India Ltd.)
Shri N. K. Khasnavis, B. Sc., LL. B. (Laboratory Asstt.)
Shri Vijay Singh (Glass Blower since 12.2.74)

Store

Shri I. J. Mehra, B. A. (Store-Keeper)

Photography & Drawing

Shri S. S. Rana (Artist)
Shri P. C. Roy (Photographer)

Balance Sheet As

LIABILITIES		AMOUNT Rs.	AMOUNT Rs.
Capital Funds			
As per 31st March, 1973		21,98,122.60	
Govt. of India grants on Capital Account during the year		2,09,330.00	
Recurring grant used for Capital formation			
Library Trays	95.95		
Ft. Charges on gift	91.50		
Maps & Toposheet	2,794.36		
Library Books & Journals	17,406.59	20,388.40	
		24,27,841.00	
Less Refunds to Govt. out of Capital Grant		801.77	24,27,039.23
Add Excess of Rev. Grants over Rev. Expenditure			2,42,676.47
Add Funds provided by other organisations for Capital Formation :			
M. G. T. Scheme (C.S.I.R.)		8,100.79	
Coal Scheme	,,	7,784.66	
Palynology Scheme	,,	5,207.87	
Rajasthan Scheme (Sponsored by Univ. of Wisconsin)		58,913.25	80,006.57
	Total	C/o	27,49,722.27

PALAEOBOTANY, LUCKNOW

On 31st March, 1974

ASSETS	AMOUNT Rs.	AMOUNT Rs.
Land-Donated By U. P. Government		32,292.00
Works and Building		
As per 31st March, 1973	10,51,167.96	
During the year	52,863.80	11,04,031.76
Apparatus & Equipments		
(A) *Apparatus & Equipment*		
As per 31st March, 1973	5,64,628.28	
During the year	7,242.70	
(B) *Workshop Equipment*		
As per 31st March, 1973	62,213.95	
(C) *Office & Misc. Equipment*		
As per 31st March, 1973	44,225.00	
During the year	2,053.37	
(D) *Plant and Machinery*		
As per 31st March, 1973	77,805.19	
During the year	3,391.44	
Establishment of C-14 Laboratory	94,551.06	8,56,113.99
Apparatus & Equipments (Donated)		
M. G. T. Scheme	7,155.79	
Burmah Oil Company	700.00	
Founders Donation	2,500.00	
Coal Scheme	6,645.29	
Palynology Scheme	5,207,87	
Rajasthan Scheme	21,138.90	43,347.85
	Total Carried Over	20,35,785.60

Balance Sheet As

LIABILITIES	AMOUNT Rs.	AMOUNT Rs.
Balance Brought Forward		27,49,722.27
Cost of Land Donation by		
U. P. Government		32,292.00
UNESCO Aid Fund		19,629.75
Value of Gift in Kind—Humboldt		
Foundation W. Germany		75,000.00
Contributory Provident Fund		8,54,650.15
Donation Accounts		
C. D. P. Memorial Fund	1,626.88	
C. L. K. Memorial Fund	2,196.00	
P. C. B. Memorial Fund	1,961.75	
A. C. Seward Memorial Fund	7,419.50	
P. N. Srivastava Memorial Fund	2,200.00	
Other Donations	7,210.90	
Dorothy Walton	352.70	22,967.73
Founders Donation Account		1,52,500.00
Burmah Oil Company		1,900.00
Deposits Accounts		15,440.22
Value of Priced Publications as per Contra		2,23,534.00
Loans and Advances		51,914.00
Sundry Creditors For Salaries and Wages		287.00
Total C/o		41,99,837.12

PALAEOBOTANY, LUCKNOW

On 31st March, 1974

ASSETS	AMOUNT Rs.	AMOUNT Rs.
Balance Brought Forward		20,35,785.60
UNESCO Aid Equipment		19,629.75
Humboldt Foundation W. Germany (Gift of Microscope)		75,091.50
Vehicles		56,433.65
Furniture and Fixtures		
As per 31st March, 1973	3,07,885.23	
During the year	13,192.47	3,21,077.70
Furniture and Fixtures (Donated)		
Burmah Oil Company	1,200.00	
M. G. T. Scheme	945.00	
Coal Scheme	1,139.37	
Rajasthan Scheme	979.70	4,264.07
Books and Journals		
As per 31st March, 1973	13,693.74	
During the year	20,049.18	
Founders Library Donated	50,000.00	83,742.92
Maps and Toposheets		
As per 31st March, 1973		6,503.76
Total C/o		26,02,528.95

Balance Sheet As

LIABILITIES	AMOUNT Rs.	AMOUNT Rs.
Balance Brought Forward		41,99,837.12
Carried Over		41,99,837.12

PALAEOBOTANY, LUCKNOW

On 31st March, 1974

ASSETS	AMOUNT Rs.	AMOUNT Rs.
Balance Brought Forward	—	26,02,528.95
Founders Fossil Collection (Donated)	—	50,000.00
Donation Account		
Investments	—	17,500,00
Contributory Provident Fund		
Investments	—	6,21,560.93
Advances out of G. P. F.	—	67,509.00
Insurance Policies subscribed out of G.P.F. to the extent of	—	31,526.00
Priced Publication in Stock		
"The Palaeobotanist" Volume 1–20	1,35,905.00	
"Seward Memorial Lecture" Nos. 1, 2, 4–8, 11–19	19,076.00	
Silver Jubilee Lecture No. 1	984.00	
Birbal Sahni Memorial Lecture No. 1	984.00	
Symposium on "Floristics & Stratigraphy of Gondwanaland"	22,400.00	
Monograph "Revisions of Indian Fossil Plants Part III-Monocotyledons"	43,800.00	
Picture Post Cards	385.00	2,23,534,00
Loans & Advances		
Conveyance Advances	47,748.00	
Festival Advances	3,500.00	
Flood Relief Advances	666,00	51,914.00
Carried Over		36,66,063.88

BIRBAL SAHNI INSTITUTE OF

Balance Sheet As

LIABILITIES	AMOUNT Rs.	AMOUNT Rs.
Balance Brought Forward		41,99,837.12
Grand Total :		41,99,837.12

Sd/- Ghanshyam Singh
Accounts Officer
Birbal Sahni Institute of Palaeobotany,
Lucknow.

Sd/- V. B. Saxena
Section Officer
C. P.-II, Lucknow.

PALAEOBOTANY, LUCKNOW

On 31st March, 1974

ASSETS	AMOUNT Rs.	AMOUNT Rs.
Balance Brought Forward		36,66,063.88
Sundry Debtors		
For unsettled Advance C. R. Account	47,074.40	
For unsettled Advance C. N. R. Account	14,885.03	61,959.43
Unesco Book Coupons		8,330.25
Cash Balances		
At Bank		
Current Account at S. B. I. Lucknow	3,28,980.44	
Savings Bank Account at S.B.I. Lucknow	1,34,054.22	4,63,034.66
In hand		
Cash in hand (C/A) Account	423.74	
Cash in hand (Oil India Scheme)	16.16	439.90
Grand Total		41,99,837.12

Sd/. Gurcharan Singh	Sd/- G.D. Agarwal	Sd/- K.R. Surange
Reglstrar	Zonal Audit Officer	Director
Birbal Sahni Institute of Palaeobotany, Lucknow	Zonal Audit Officer, Lucknow Zone, Luckuow	Birbal Sahni Institute of Palaeobotany Lucknow

Income & Expenditure Account for the

Expenditure	Plan	Non-Plan	Total
Academic Expenses			
To Pay & Allowance of academic Staff	1,68,791.58	2,63,437,77	4,32,229.35
To field Excursions	—	11,999.85	11,999,85
To Refresher Course Expenses	—	—	—
To Honorarium to Lecturers :			
(i) Birbal Sahni Memorial Lecturer	— —	350.00	350.00
(ii) Silver Jubilee Memorial Lecturer.	— —	350.00	350.00
To training of Academic staff at G.S.I. Camp	— —	3,870.39	3,870.39
To International Programmes :	—		
Deputations Abroad	—	24,814.60	24.814.60
To Series of Extension Lectures	—	—	—
To Honorarium to Foreign Visiting Scientists	—	—	—
To Presentation of Medals	—	—	—
Carried Over	1,68,791.58	3,04,822.61	4,73,614.19

PALAEOBOTANY, LUCKNOW

Year Ending 31st March, 1974

Income	Plan	Non-Plan	Total
Balance of Last Year's Grant on Revenue A/C allowed for expenditure during current year, Silver Jubilee and Oil India Grant A/C.	—	59,568.89	59,568.89
By Grants from Govt. of India on Revenue Account	2,83,000.00	10,14,340.00	12,97,340.00
By Grants from Govt. of India for Silver Jubilee	—	—	—
By Grants from U. P. Govt. on Revenue A/C.	—	5,000.00	5,000.00
By Grants from Govt. of India for Res. Scholarship	—	15,054.00	15,054.00
By Grants from other Organisations			
(i) Oil India Ltd.	—	10,000.00	10,000.00
(ii) Subventions from Universities and U. G. C. for Silver Jubilee Celebrations	—	3,303.55	3,303.55
Carried Over	2,83,000.00	11,07,266.44	13,90,266.44

BIRBAL SAHNI INSTITUTE OF

Income & Expenditure Account for the

Expenditure	Plan	Non-Plan	Total
Brought Forward	1,68,791.58	3,04,822.61	4 73,614.19
Expenses on Services Anciliary to Resarch			
To Pay & Allowances of Auxiliary Tech. Staff.	31,319.31	97,531.14	1,28,850.45
To Chemicals, Glass-ware, Photogoods & Small Apparatus etc.	—	23,521.05	23,521.05
To Library Requirements	—	19,972.43	19,972.43
To Museum Requirements	—	2,937.79	2,937.79
To Herbarium Requirements	—	2,008.08	2,008.08
To Maintenance of Equip-ment & Apparatus & Workshop Machinery etc.	—	—	—
To Publication Expenses			
"The Palaeobotanist"	—	28,754.62	28,754.62
Symposium	—	—	—
Monograph	—	—	—
Birbal Sahni Memorial Lecture	—	382.80	382.80
Silver Jubilee Memorial Lecture	—	328.00	328.00
Seward Memorial Lecture	—	475.60	475.60
Annual Report	—	2,150.32	2,150.32
Carried Over	2,00,110.89	4,82,884.44	6,82,995.33

PALAEOBOTANY, LUCKNOW

Year Ending 31st March, 1974

Income	Plan	Non-Plan	Total
Brought Forward	2,83,000,00	11,07,266.44	13,90,266.44
By Sale Proceeds of Publications			
(i) The Palaeobotanist	—	29,309.62	29,309.62
(ii) Monographs	—	296.30	296.30
(iii) Symposium	—	134.40	134.40
(iv) Seward Memorial Lecture.	—	335.50	335.50
(v) Picture Post Cards	—	562.00	562.00
By other Income			
(i) By Vehicle charges	—	485.34	485.34
(ii) By Telephone charges	—	401.95	401.95
(iii) By Visiting Scientist room charges	—	235.00	235.00
By Miscellaneous Receipts and Recoveries			
Miscellaneous Receipts and Recoveries	284.98	5,863.30	6,148.28
Recoveries of Flood Advance	—	4,250.00	4,250.00
Recoveries of Conveyance Advance	—	1,610.00	1,610.00
Recoveries of Festival Advance	—	—	—
Receipt from Contractors	—	480.00	480.00
Interest on Advances	—	1.40	1.40
Total C/O Rs.	2,83,284.98	11,51,231.25	14,34,516.23

Income & Expenditure Account for the

Expenditure	Plan	Non-Plan	Total
Brought Farward	2,00,110.89	4,82,884.44	6,82,995.33
To Travelling and other Allowances			
For Governing Body, Scientific Programmes & Evaluation Committe and Selection Committee meetings	—	4,649.78	4,649.78
For attending Scientific meetings & Conferences in India and for other purposes.	—	5,466.69	5,466.69
To Reimbursement of Medical Expences	4,124.47	14,163.74	18,288,21
To Over Time Allowance	475.06	1,209.84	1,684.90
To Leave Travel Concession	98.40	173.53	271.93
To Honorarium to Secretary to Chairman	—	600,00	600.00
To Reinbursement of Tuition Fee	—	298.24	298.64
To Child Education Allowance	—	720.00	720.00
Total C/O Rs.	2,04,808.82	5,10,166.26	7,14,975.08

PALAEOBOTANY, LUCKXOW

Year Ending 31st March, 1974

Income	Plan	Non-Plan	Total
Brought Forward	2,83,284.98	11,51,231.25	14,34,516.23
Carried Over	2,83,284.98	11,51,231.25	14,34,516.23

BIRBAL SAHNI INSTITUTE OF

Income & Expenditure Account for the

Expenditure	Plan	Non-Plan	Total
Brought Forward	2,04,808.82	5,10,166.26	7,14,975.08
To General Expenses			
To Pay & Allowance of Administrative staff	22,535.83	1,65,526.93	1,88,062.76
To Telephone & Trunk Call chargcs	—	12,052.25	12,052.25
To Postage	—	5,849.75	5,849.75
To Advertisement charges	—	5,773.42	5,773.42
To Hot & Cold Weather charges	—	1,700.00	1,700.00
To Petrol & Mobil Oil	619.00	4,241,26	4,860.26
To Electricity charges	—	10,017.42	10,017.42
To Municipal Taxes	—	4,377.18	4,377.18
To Insurance of Vehicles & Library	—	589.25	589.25
To Uniform to Class IV Staff	—	3,205.69	3,205.69
To Printing & Stationery	—	6,993.53	6,993.53
To Customs Duty & Port Trust charges	—	180.85	180.85
To Railway Ft. & Carriage	—	728.23	728.23
To Entertainment All. to Director	—	1,246.09	1,246.09
Carried Over	2,27,963.65	7,32,648.11	9,60,611.76

PALAEOBOTANY, LUCKNOW

Year Ending 31st March, 1974

Income	Plan	Non-Plan	Total
Brought Forward	2,83,284.98	11,51,231 25	14,34,516.23
Carried Over	2,83,284.98	11,51,231.25	14,34,516.23

Income & Expenditure Account for the

Expenditure	Plan	Non-Plan	Total
Brought Forward	2,27,963.65	7,32,648.11	9,60,611.76
To Miscellaneous & Unforseen Exps.	70.00	7,862.41	7,932.41
To Leave Salary	5,053.58	18,382.74	23,436.32
To Maintenance Expenses			
To Building	—	1,950.01	1,950.01
To Garden	—	1,456.17	1,456.17
To Vehicles	1,260.80	2,502.42	3,763.22
To Repairs & Renewals	—	3,933.01	3,933.01
To Petty Construction	—	4,897.10	4,897.10
To Other Expenses			
To contribution to Provident Fund	6,216.00	19,505.00	25,721.00
To Legal advice	—	—	—
To Medical advice	—	28.00	28.00
To Festival advance	—	3,500.00	3,500.00
To Flood Relief Advance	—	—	—
To Conveyance advance	—	49,358.00	49,358.00
To Oil India Expenses			
To Pay & Allowances To T. A. Expenses To Contingencies	—	9,031.12	9,031.12
To Silver Jubilee Expenses			
To Silver Jubilee Publication	—	1,551.88	1,551.88
Carried Over	2,40,564.03	8,56,605.97	10,97,170.00

PALAEOBOTANY, LUCKNOW

Year Ending 31st March, 1974

Income	Plan	Non-Plan	Total
Brought Forward	2,83,284.98	11,51,231.25	14,34,516.23
Carried Over	2,83,284.98	11,51,231.25	14,34,516.23

BIRBAL SAHNI INSTITUTE OF

Income & Expenditure Account for the

Expenditure	Plan	Non-Plan	Total
Brought Forward	2,40,564.03	8,56,605.97	10,97,170.00
To Govt. of India Scholarships Expenses	—	15,053.72	15,053.72
To Last Year's Excess Expenditure			
Central Recurring grant account	44,811.02	24,675.49	69,486.51
Govt. of India Res. Scholarship grant A/C	—	00.53	00.53
To expenditure on transfer to C. N. R. A /C	—	5,105.00	5,105.00
To expenditure on Misc. Receipts	—	4,887.00	4,887.00
	2,85,375.05	9,06,327.71	11,91,702.76
Excess of revenue over expenditure	(—)2,090.07	(+)2,44,903.54	(+)2,42,813.47
Grand Total Rs.	2,83,284.98	11,51,231.25	14,34,516.23

Sd./-Ghanshyam Singh
Accounts Officer
Birbal Sahni Institute of
Palaeobotany, Lucknow.

Sd /- V. B. Saxena
Section Officer
C. P. II, Lucknow.

Sd./- Gurcharan Singh
Registrar
Birbal Sahni Institute of
Palaeobotany, Lucknow.

PALAEOBOTANY, LUCKNOW

Year Ending 31st March, 1974

Income	Plan	Non-Plan	Total
Brought Forward	2,83,284.98	11,51,231.25	14,34,516.23
Grand Total Rs.	2,83,284.98	11,51,231.25	14,34,516.23

Sd/- G. D. Agarwal
Zonal Audit Officer,
Lucknow Zone, Lucknow

Sd/- K. R. Surange
Director
Birbal Sahni Institute of
Palaeobotany, Lucknow.

BIRBAL SAHNI INSTITUTE OF

Receipt and Payment Account for the

Receipts	Plan	Non-Plan	Total
To Opening Balance	1,03,154.85	—	1,03,154.85
Bank Account (Misc)	—	60.08	60.00
Cash Account	—	155.42	155.42
Oil India Account			
Bank Account	—	1,448.52	1,448.52
Cash Account	—	21.16	21.16
Donation Account			
Bank Account	—	15,370.23	15,370.23
Silver Jubilee Account			
Bank Account	—	57,883.79	57.883.79
Amount spent out of balance		—	—
now recouped	—	—	—
Refund of Excursion Advance		—	—
Proceeds of Cancelled cheque		—	—
To Govt. of India Grants (REV. A/c)	2,09,330.00	—	2.09,330.00
To Govt. of India (Rev. A/c)	2,83,000.00	10,14,340.00	12,97,340.00
Govt. of India Grants (S. J. A/c)	—	—	—
To Govt. of India Res. Schol. Grants	—	15,054.00	15,054.00
To Govt of U. P. Research Grant		5,000.00	5,000.00
To Grants from other organisations :			
Silver Jubilee	—	3,303.55	3,303.55
Oil India	—	10,000.00	10.000.00
Carried Over	5,95,484.85	11,22,636.67	17,18,121.52

PALAEOBOTANY, LUCKNOW.

eriod 1.4.1973 to 31.3.1974

Payments	Plan	Non-Plan	Total
By Opening Balance	44,811.02	24,676.02	69,487.04
By Works & Building	52,009.70	—	52,009.70
By Researsh Apparatus & Equipment	18,871.00	—	18,871.00
By Equipment for services Ancilliary to Research :			
Photography section	3,254.30	—	3,254.30
Library	3,837.59	—	3,837.59
Herbarium	—	—	—
Museum	2,053.37	—	2,053.37
Workshop, Maceration, Auditorium and Lab. Stores	460.00	—	460.00
Visiting Scientist Room	1,484.59	—	1,484.59
Garden Equipment	—	—	—
Office and Misc. Equipment	3,391.44	—	3,391.44
C-14 Laboratory	1,02,886.74	—	1,02,886.74
By Furniture & Fixtures	10,811.03	—	10,811.03
By Vehicles	—	—	—
By Refund of Grants to Government			
Capital Grants	801.77	—	801.77
Revenue Grants	—	—	—
Silver Jubilee Grants	—	—	—
By Pay and Allowances :			
Pay (Academic)	1,14,935.30	1,83,382.76	2,98,318.06
Pay (Auxiliary Technical)	13,707.37	45,514.74	59,222.11
Carried Over	3,73,315.22	2,53,573.52	6,26,888.74

BIRBAL SAHNI INSTITUTE OF

Receipt and Payment Account for the

Receipts	Plan	Non-Plan	Total
Brought Farword	5,95,484.85	11,22,636.67	17,18,121.52
To Sale Proceeds of Publications :			
The Palaeobotanist	—	29,309.62	29,309.62
Monograph	—	296.30	296.30
Symposium	—	134.40	134.40
Seward Memorial Lecture		335.50	335.50
Picture Post Cards	—	562.00	562.00
To Administrative Receipts			
Income Tax	8,672.00	18,575.00	27,247.00
Insurance Premium (S. S. Scheme)	5,599.84	17,384.68	22,984.52
C. T. D. (Post Office)	180.00	470.00	650.00
Vehicle Charges	—	485.34	485.34
Telephone Charges	—	401.95	401.95
V. S. Room Charges	—	235.00	235.00
Recovery of Advances & Interest Under C.P.F.	17,868.00	53,769.00	71,637.00
C. P. F. Subscription	9,317.00	28,749.00	38,066.00
Exeess Subsription of C. P. F.	1,535.00	4,980.00	6,515.00
Misc. receipts & Recoveries	284.98	5,863.30	6,148.28
To Loans and Advances			
Recovery of Flood Relief Advance	—	4,250.00	4,250.00
Carried Over	6,38,941.67	12,98,437.76	19,27,379.43

PALAEOBOTANY, LUCKNOW.

Period 1.4.1973 to 31.3.1974

Payment	Plan	Non-Plan	Total
Brought Forward	?,73,315.22	2,53,573.52	6,26,888.74
Pay (Administrative)	8,895.20	80,271.58	89,166.78
Leave Salary	5,053.58	18,382.74	23,436.32
Dearness Pay	28,860.03	74.682.74	1,03,542.77
Dearness Allowance	14,993.64	43,003.80	57,997.44
House Rent Allowance	18,236.28	38,000.18	56,236.46
City Compensatory Allowance	8,968.59	21,110.38	30,078.97
Interim Relief	14,050.31	40,529.66	54,579,97
Children Educational Allowance	—	720.00	720.00
Over time Allowanee	475.06	1,209.84	1,684.90
Reimbursement of Medical Expences	4,124.47	14,163.74	18,288.21
Reimbursement of Tuition Fees	—	298.24	298.24
Leave Travel Concession	98.40	173.53	271.93
Hon. to Secy. to Chairman	—	600.00	600.00
By Travelling Allowance			
For Governing Body, & Selection Committee Meetings etc.	—	4,649.78	4,649.78
For attending meetings & Conference in India & for other purposes	—	6,861.09	6,861.09
By Maintenance of Property			
For Building	—	1,950.01	1,950.01
Carried Over	4,77,070.78	6,00,180.83	10,77,251.61

BIRBAL SAHNI INSTITUTE OF

Receipt and Payment Account for the

Receipts	Plan	Non-Plan	Total
Brought forward	6,38,941.67	12,88,437.76	19,27,379.43
Recovery of Festival Advance	—	—	—
Recovery of conveyarce Advance.	—	1,611.40	1,611.00
To Deposits			
Security Deposits	15,440,22	480.00	15,920.22
Miscellaneous Deposits	—	—	—
Donations & Endowments			
Donation	—	—	—
Proceeds of Matured Securities		4,000.00	4,000,00
Interest	—	447.50	447.50
Total C/o	6,54,381.89	12,94,976.66	19,49,358.55

PALAEOBOTANY, LUCKNOW.

Period 1.4.1973 to 31.3.1974

Payment	Plan	Non-Plan	Total
Brought Forward	4,77,070.78	6,00,180.83	10,77,251.61
For Garden	—	1,456.17	1,456.17
For equipment & Apparatus	—	—	—
For Vehicles	1, 60.80	2,502.42	3,763.22
For Repairs & Renewals	—	3,933.01	3,933.01
For Petty Constructions	—	4,897.10	4,897.10
By Contingencies			
For Telephone & Trunk Call Charges	—	12,052.25	12,052.25
For Postage	—	5,849.75	5,849.75
For Advertisement	—	5,773.42	5,773.42
For Hot & Cold weather Charges	—	1,700.00	1,700.00
For Petrol & Mobile Oil	619.00	4,241.26	4,860.26
For Electricity Charges	—	10,017.42	10,017.42
For Municipal Taxes	—	4,377.18	4,377.18
For Insu. of Vehicles & Liberary		589.25	589.25
For Liveries to Subordinate Staff		3,205.69	3,205.69
For Printing and Stationery	—	6,993.53	6,993.53
For Custom duty & Port Trust Charges	—	180.85	180.85
For Railway Ft. & Carriage	—	728.23	728.23
For Entertainment Allowance to Director		1,246.09	1,246 09
For Miscellaneous and Unforeseen	— 70.00	7,862.41	7,932,14
Carried Over	4,79,020.58	6,77,786.86	11,56,807.44

BIRAAL SAHNI INSTITUTE OF

Receipt and Payment Account for the

Receipts	Plan	Non-Plan	Total
Brought forward	6,54,381.89	12,94,976.66	19,49,358.55
Carried Over	6,54,381.89	12,94,976.66	19,49,358.55

PALAEOBOTANY, LUCKNOW.

Period 1.4 1973 to 31.3.1974

Payment	Plan	Non-Plan	Total
Brought Forward	4,79,020.58	6,77,786.86	11,56,807.49
For Glassware and Chemicals etc.	—	23,521.05	23,521.05
For Library requirements	—	19,972.43	19,972.43
For Museum Requirements	—	2,937.79	2,937.79
For Herbarium Requirements	—	2,798.08	2,798.08
For Legal Advice	—	—	—
For Medical Advice	—	28.00	28.00
By Publication			
For the Palaeobotanist	—	28,754.62	28,754.62
For Symposium	—	—	—
For Monograph	—	—	—
For Seward Memorial Lecture	—	475.60	475.60
For Annual Report	—	2,150.32	2,150.32
For Birbal Sahni Memorial Lecture	—	382.80	382.80
For Silver Jubilee Memo-Lecture	—	328.00	328.00
By Academic Expenses			
For Field Excursion	—	16,889.85	16,889.85
For Refresher Course Expenses	—	—	—
For Honorarium to Lecturers :			
Carried Over	4,79,020.58	7,76,025.40	12,55,045.98

Receipt and Payment Account for the

Payment	Plan	Non-Plan	Total
Brought Forward	6,54,381.89	12,94,976.66	19,49 358.55
Carried Over	6,54,381.89	12,94,976.66	19,49,358.55

PALABEOBOTANY, LUCKNOW.

Period 1.4.1973 to 31.3.1974

Payment	Plan	Non-Plan	Total
Brought Forward	4,79,020.58	7,76,025.40	12,55,045.98
Birbal Sahni Memo. Lecture	—	350.00	350.00
Silver Jubilee Memorial Lecture	—	350.00	350.00
Sir A. C. Seward Memorial Lecture out of Donation Account	—	350.00	350.00
For Training of Academic staff at G. S. I. Camp.	—	3,870.39	3,870.39
By International Programmes			
Air passage for members of staff proceeding on foreign fellowships or invited to attend Scientific meetings and Conferences Abroad	—	24,814.60	24,814.60
International Cultural Exchange Programmes	—	—	—
Honorarium to Foreign Visiting Scientists	—	—	—
By Silver Jubilee Celebration			
Silver Jubilee Publications	—	41,551.88	41,551.88
Carried Over	4,79,020.58	8,47,312.27	13,26,332.85

BIRBAL SAHNI INSTITUTE OF

Receipt and Payment Account for the

Payments	Plan	Non-Plan	Total
Brought Forward	6,54,381.89	12,94,976.66	19,49,358.55
Carried Over	6,54,381.89	12,94,976.66	19,49,358.55

PALAEBOTANY, LUCKNOW.

Period 1.4.1973 to 31.3.74

Receipts	Plan	Non-plan	Total
Brought Forward	4,79,020.58	8,47,312.27	13,26,332.85
By C.P.F. Account			
Contribution towards C.P.F.	6,216.00	19,505.00	25,721.00
C.P.F. Subscription transferred to C.P.F. Account	10,852.00	33,729.00	44,581.00
Recovery of Advances & Interest thereon transferred to C.P.F. Acccount	17,868.00	53,769.00	71,637.00
By Miscellaneous			
Income Tax Remitted	8,672.00	18,575.00	27,247.00
Insurance Premium Remitted	5,599.84	17,384.68	22,984.52
C.T.D. Amount Remitted	180.00	470.00	650.00
By Government of India Scholarship	—	15,053.72	15,053.72
By Loans and Advances			
Flood Relief	—	—	—
Festival Advance	—	3,500.00	3,500.00
Conveyance Advance	—	49,358.00	49,358.00
By Oil India Expenses	—	9,031.12	9,031.12
By Expenditure out of Misc. Receipts—	—	4,887.00	4,887.00
Carred Over	5,28,408.42	10,72,574.79	16,00,983.21

BIRBAL SAHNI INSTITUTE OF

Receipt and Payment Account for the

Payment	Plan	Non-Plan	Total
Brought Forward	6,54,381.89	12,94,976.66	19,49,358.55
Grand Total	6,54,381 89	12,94,976.76	19,49,358.55

Closing Balance

	Bank		Cash	
	Recurring	Non-Recurring	Recurring	Non-Recurring
Plan	(—)2,090.07	1,28,063,54	150.00	
Non-Plan				
Central Recurring	—	1,75,482.63	273.74	
Scholarship	—	(—) 00.25	—	
Oil India	—	2,422.40	16.26	
Silver Jubilee	—	19,635.46	—	
Donation and Endowment	—	5,467.73	—	
		2,03,007.22	289.90	
		(—) 00.25		
		2,03,006.97		

PALAEOBOTANY, LUCKNOW.

Period 1.4.1973 to 31.3.1974

Receipts	Plan	Non-Plan	Total
Brought Forward	5,28,408.42	10,72,574.79	16,00,983.21
By Amount Transferred to C.N.R. Deposit Account	—	5,105.00	5,105.00
By Donation Account Expenses			
By Investment in F.D.R. at S.B.I.	--	14,000.00	14,000.00
By Closing Balance	1,25,973.47	2,03,296.87	3,29,270.34
Grand Total : Rs.	6,54,381.89	12,94,976.66	19,49,358.56

Sd/- V.B. Saxena,
Section Officer
C.P.-II, Lucknow.

Sd/- G.D. Agarwal,
Zonal Audit Officer
Lucknow Zonel, Lucknow

Sd/- Ghanshyam Singh
Accounts Officer
Birbal Sahni Institute of
Palaeobotany, Lucknow.

Sd/- Gurcharan Singh,
Registrar
Birbal Sahni Institute of
Palaeobotany, Lucknow.

Sd/- K.R. Surange,
Director,
Birbal Sahni Institute of
Palaeobotany,
Lucknow.

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