THE MACHRIS BRAZILIAN EXPEDITION

GENERAL ACCOUNT

By JEAN DELACOUR
FOREWORD

This is the first installment of a new series which we call Los Angeles County Museum Contributions in Science. Our institution so far has never possessed a technical publication of its own. Many important papers by members of the staff, usually based on material deposited in the Museum, have in the past appeared in various periodicals issued throughout the country. As our collections are growing rapidly, they afford excellent material for study; it has become imperative that the results of work based on them should be presented in a special publication. The recent Expedition to Brazil sponsored by Mr. and Mrs. Maurice A. Machris is a most appropriate occasion to launch our new "Contributions in Science," as it has provided us with an unusual wealth of scientific material and supplied the necessary financial resources to make a start. This first number, a general account of the Machris Brazilian Expedition, will be followed almost immediately by an introductory paper on the botanical aspects of the Expedition, and very soon by others dealing with Entomology, Ornithology, special branches of Botany and other disciplines.

The present publication is not a periodical. As is the case with many other scientific museum publications, it will appear from time to time as the need arises and resources are found.

It is an honor and a pleasure to introduce "Contributions in Science" to the scientific world.

JEAN DELACOUR, Director

Los Angeles County Museum
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By Jean Delacour

The fauna and flora of the world had only begun to be known to any extent during the 18th century and the ensuing era of discovery of the bulk of the species, particularly vertebrates, can be said to have ended in the first half of the 20th century. Today, the finding of many startling novelties among mammals and birds, for example, is unlikely to happen. But there is still a great deal to be learned of the distribution, the variation and the habits of animals. Also, in some branches of Natural History, such as Entomology and Botany, many new forms remain to be found and described. There is, therefore, a large field still open at present for collecting expeditions. Here in the west, we are especially eager to gather specimens throughout the world. Although the museums of eastern cities such as Washington, New York, Philadelphia and Cambridge (Mass.) possess world wide series which can happily compare with the great ones of Europe, there are no such collections in the western United States. Several museums can boast of excellent western American collections, but specimens from other parts of the world are comparatively scant. Material for wide general studies, representing the fauna and flora of the whole world, is simply not available west of Chicago. It has occurred to us that Los Angeles, with its County Museum, is particularly well placed to endeavor to build up such world collections. We have been working toward this ambitious but by no means impossible project the last few years. It will, no doubt, take a long time before we acquire collections which can compare with those of Chicago and of the eastern cities; but we have made a good start. In recent years, important material has been obtained in Mexico, in Australia and in East Africa, thanks to the help of generous friends: Mr. W. J. Sheffler, Mr. John B. Davidson, and Mr. and Mrs. Maurice Machris.

None of those very useful ventures can, however, compare with the Brazilian Expedition of 1956 which is among the widest in scope undertaken in recent years. The Los Angeles County administration provides the means of keeping the Museum in good order, and of progressing each year. But for funds for new acquisitions we depend
largely upon the generosity of friends. It was, therefore, our good fortune that Mr. and Mrs. Maurice Machris offered to sponsor in our interest a project of such grand scale.

Many parts of the world have been practically closed to exploration since the last World War. It seemed to us that among the still accessible countries the immense territory of Brazil offered the best chance for useful work. It was not probable that any part of it would yield many sensational novelties in the way of vertebrates, but many important insects and plants, no doubt, remained to be discovered. Furthermore, very little of the distribution and variation of the species of mammals, birds, reptiles, amphibians and fishes were yet accurately known.

We chose the headwaters of the Río Tocantins in the State of Goiás, central Brazil (see fig. 1), as the principal field of research primarily because of its zoological promise; only a very few birds had been collected in the area previously; there had been no entomological research. Botanical interest was based on the classical early 19th century collecting in that immediate area. It was urgent to establish the inventory of its wild life as it is likely to be considerably damaged by civilization in the near future. A high plateau, 3,000 feet in altitude, with a good climate, fertile soil and abundant water, central Goiás will no doubt soon be heavily settled, just as similar areas to the south (southern Goiás, western Minas Gerais, and São Paulo) have already been. Even now progressive damage is evident as many areas have been widely burned to provide for grazing. There is also a plan to build the new federal Capital there, close to what is today the small town of Planaltina, and talk of starting soon on the project is now frequent. All this means the destruction of a good deal of animal and plant life, even if, as it is hoped, adequate national parks and nature reserves are established when such a development takes place.

Plans for a thorough survey of the selected region were organized early in 1955, and the personnel for the Expedition chosen, as follows:

Mr. and Mrs. Maurice Machris and myself, as joint leaders
Mr. Harry F. Burrell, professional cinematographer
Dr. E. Yale Dawson, Botanist
Mr. and Mrs. Milton Sperling, in charge of equipment and camping
Mr. Kenneth E. Stager, Curator of Ornithology-Mammalogy
Mr. Dean Torrence, assistant to Mr. Machris
Dr. Fred S. Truxal, Curator of Entomology
Fig. 1. Map showing route of expedition in Brazil (dotted lines). The rectangle marks the area of the headwaters of the Rio Tocantins.
It is, of course, not possible to launch a large expedition into a foreign country without the necessary permits and the help of local authorities. Accordingly, we submitted our plans to Dr. José Candido Mello Carvalho, Director of the Museu Nacional do Brasil, at Rio de Janeiro, inviting his institution to share in our efforts as well as in the results. His answer was enthusiastic, and his help and efficiency remarkable. From his staff, he provided the following additional members of the Expedition who proved to be competent naturalists and delightful companions: Mr. Antenor L. Carvalho, Herpetologist and Ichthyologist; Mr. Herbert F. Berla, Ornithologist; and Mr. Joaquim Pereira, Preparator. In July, 1955, Mr. Torrence flew to Rio de Janeiro to confer with Dr. Carvalho and make all necessary arrangements. Also, at this time, Mr. Torrence had aerial photographs made of the route that the Expedition planned to follow in the state of Goiás, including newly built roadways which make much of this country accessible to motor vehicles for the first time.

Equipment for the Expedition was selected with great care to meet our particular requirements. Four trucks and two trailers were acquired to transport the considerable camping and collecting equipment we needed, and few expeditions so far have been so well fitted. The four trucks were high-chassised and equipped with 4-wheel drive in order to negotiate the high-center oxcart roads and difficult terrain with heavy grades. Two trucks were designed with trap-door top to permit collecting and the operation of the motion picture camera while traveling. The custom-built trailers carried a 5000 watt electric generator, refrigerator and deep freeze, and a water purification unit. Tents were especially designed by Mr. Machris for protection from excessive temperatures and bothersome insects. All of the equipment, packed in the trucks and trailers, was shipped by boat to São Paulo early in February, 1956, six weeks before our departure.

Dr. Dawson preceded the rest of the party in order to make advance contacts with the Director and staff of the Museu Nacional and arrange with the Customs for the free entry of our equipment. The other Los Angeles members of the Expedition arrived in Rio de Janeiro by plane on March 16, 1956. After a week in Rio, visiting the museums and zoos and making official contacts, we went on to São Paulo to prepare for departure with the vehicles into the interior.

The Expedition left São Paulo on March 31st, taking the road northward to Goiás, a 600 mile stretch made tedious by the very poor state of the roadbed. The complete itinerary, including our overnight
stops (page 11), will show the numerous towns through which we passed (see also, map, fig. 1). Although the country as far as Anapolis is well settled and cultivated, we found some interesting specimens on the way. Traveling northeast from Anapolis, we crossed the divide separating the Amazon basin from the Paraná basin and approached the headwaters of the Rio Tocantins, the great affluent of the lower Amazon. Our first Base Camp was established on April 12 at an elevation of about 3,500 feet, 12 miles north of the small village of São João da Aliança. This was a plateau of extensive grasslands, and gallery forests along the streams. There was plenty of wild life, including large mammals and birds, and most of the shrubs and herbs were in bloom, many of them beautiful. We were drenched now and then, the rains being late to stop this year, and the biting insects were tiresome, but the temperature was pleasant (maximum 84°F, minimum 54°F).

From this Base Camp, collecting activities extended within a radius of several miles, and side trips were made to nearby localities by various members of the party. Mr. Torrence and I left the Expedition on April 19th, but the rest of the party continued the survey of the area until May 6 before proceeding to the second objective. Although Base Camp No. 2 was only 90 airline miles northwest from Camp No. 1, across the Tocantins River, it was necessary to retrace the route south to Anapolis and then proceed northward again on the west side of the river, a distance of nearly 500 miles. The second Base Camp was established in the Serra Dourada range, 12 miles east of the small town of
Formoso,* at an elevation of about 3,000 feet, in a region of dense forest, interspersed with open scrub forest and scant grassland. Temperatures ranged from 94°F to 46°F. Plant and animal life differed considerably from those encountered at Base Camp No. 1. In addition to the collecting in the immediate Serra Dourada area, the scientific members of the party made a 150 mile trip north to Peixe on the Rio Tocantins. Mr. and Mrs. Machris, accompanied by Mr. Burrell, went to the Rio Araguaia to the northwest, the home of the interesting Carajá Indians, in order to gather ethnological and photographic material.

Throughout the Expedition, preparation of specimens was greatly facilitated by the excellent equipment. In the ornithological work, for example, it was possible to collect in the early morning, and spend the rest of the day in preparation under comfortable conditions in the work tent, continuing on into the night by electric light. An excess of specimens could be placed in the refrigerator or deep freeze for

*On map (fig. 1) at end of dotted spur northeast of Amaro Leite, not to be confused with the town of Formosa.
attention later. The Entomologist, likewise, made his collections daily and was able to prepare them under conditions nearly as convenient as in his own laboratory at the Museum. The availability of the electric generator enabled the Botanist to press and dry freshly collected specimens so rapidly that excellent color preservation was possible.

The results of the field preparation, in specimens returned to the Los Angeles County Museum, are as follows:

- Botany – 2200 herbarium and live plant specimens
- Entomology – 8100 insect specimens; 1200 arachnid specimens
- Mammalogy – 200 study skins and mammal pelts
- Ornithology – 559 study skins of birds

In addition, specimens of reptiles, amphibians and fishes were collected for the Museu Nacional.

The biological work terminated on June 17, whereupon the Expedition returned to São Paulo. Less than three months later, all equipment
and collections had arrived in Los Angeles, marking the termination of a most interesting and successful collecting trip.

The considerable series of animals and plants are immediately being worked out either by members of the Expedition and of the Museum staff, or by specialists throughout the United States, in Canada, France, Sweden, Netherlands, Argentina and Brazil. As the study of the different groups is completed, the results will be published in subsequent numbers of the present publication.

It is an agreeable duty for me to thank here Mr. and Mrs. Machris for their generosity as well as their very efficient personal work in the field and in the preparation of the Expedition; also Dr. Carvalho, the capable Director of the Museu Nacional do Brasil, without whose help and cooperation no useful work could have been possible. All the members of the staff, both Brazilian and American, proved able, cooperative and devoted to their work. They will find here the testimony of my deep appreciation.

RECORDED FIELD TEMPERATURES (High and Low)

Base Camp #1 (4500' elev.) Max. 84°F Min. 54°F
Base Camp #2 (3200' elev.) Max. 94°F Min. 46°F

AVERAGE ANNUAL RAINFALL

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<th>Goiás, Goiás</th>
<th>Formosa, Goiás</th>
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<td>11.9 inches</td>
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<td>Aug.</td>
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*About 170 miles south of Base Camp #2.
ITINERARY

Left Los Angeles — March 14, 1956
Arrived New York City — March 14
Left New York — March 15
Arrived Rio de Janeiro — March 16
Rio de Janeiro — expedition affairs — March 16-22
Left Rio for São Paulo — March 22
Arrived São Paulo — March 22
São Paulo — expedition affairs — to March 30 (incl.)
Left for Interior — March 31
March 31 — Campinas, São Paulo
April 1 — Campinas, São Paulo
April 2 — Ribeirão Preto, São Paulo
April 3 — Uberaba, Minas Gerais
April 4 — Uberlandia, Minas Gerais
April 5 — Uberlandia, Minas Gerais (1 day’s collecting)
April 6 — Morrinhos, Goiás
April 7 — Goiania, Goiás
April 8 & 9 Anapolis, Goiás
April 10 — Fly camp #1 near Braslandia, Goiás
April 11 — Fly camp #2 south of São João da Aliança
April 12 — Established Base Camp #1, 12 miles north of São João da Aliança
April 12
May 6
April 19 — Delacour and Torrence left Base Camp #1 for São Paulo
May 7 — Fly camp enroute to Anapolis
May 8 — Fly camp enroute to Anapolis
May 9 — Anapolis, Goiás to re-supply
May 10 — Anapolis, Goiás to re-supply
May 11 — Fly camp enroute to the Serra Dourada
May 12 — Fly camp near Amara Leite enroute to the Serra Dourada
May 13 — Established Base Camp #2, 12 miles east of Formoso in the Serra Dourada range.
May 13
June 16
June 17 — Fly camp enroute to Anapolis
June 18 — Arrived in Anapolis
June 24 — Expedition arrived in São Paulo and prepared for return to the U.S.