

# *Pesquisas em Geociências*

<http://seer.ufrgs.br/PesquisasemGeociencias>

---

## Upper Carboniferous Insects From Argentina I - Família Diaphanopteridae (Megasecopteroidea)

*Irajá Damiani Pinto, Lilia Pinto De Ornellas*  
*Pesquisas em Geociências*, 10 (1): 87-95, Mai./Ago., 1978.

Versão online disponível em:

<http://seer.ufrgs.br/PesquisasemGeociencias/article/view/21777>

---

Publicado por

## Instituto de Geociências

---



## Portal de Periódicos UFRGS

UNIVERSIDADE FEDERAL  
DO RIO GRANDE DO SUL

---

### Informações Adicionais

**Email:** [pesquisas@ufrgs.br](mailto:pesquisas@ufrgs.br)

**Políticas:** <http://seer.ufrgs.br/PesquisasemGeociencias/about/editorialPolicies#openAccessPolicy>

**Submissão:** <http://seer.ufrgs.br/PesquisasemGeociencias/about/submissions#onlineSubmissions>

**Diretrizes:** <http://seer.ufrgs.br/PesquisasemGeociencias/about/submissions#authorGuidelines>

---

Data de publicação - Mai./Ago., 1978.

Instituto de Geociências, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brasil

## UPPER CARBONIFEROUS INSECTS FROM ARGENTINA

### I – Família Diaphanopteridae (MEGASECPTEROIDEA)

Irajá Damiani Pinto \*  
Lilia Pinto de Ornellas \*

#### SINOPSE

É descrito novo inseto da família Diaphanopteridae: *Phliasptilon huenickeni* Pinto et Ornellas, sp. nov., da Formação Bajo de Veliz, Provincia de San Luis, Argentina. É discutida a idade, concluindo os autores pelo Carbonífero Superior para os sedimentos contendo insetos.

#### ABSTRACT

It is described a new insect of the family Diaphanopteridae *Phliasptilon huenickeni* Pinto et Ornellas, sp. nov., from Bajo de Veliz Fm., Provincia de San Luis, Argentina. The age is discussed and the authors concluded that the sediments with insect remains have an Upper Carboniferous age.

#### INTRODUCTION

A few years ago Prof. Dr. Mario Hünicken from the Universidad Nacional de Cordoba, Argentina, sent to the senior author a lot of fossil insects from Argentina for studies. Some of them were from Bajo de Veliz, Provincia de San Luis, collected at Bajo de Veliz Formation, that was believed by some authors to be Lower Permian.

This material shows, just at first glance, a very interesting aspect. It was quite similar to the Brazilian material from Itarare Group of São Paulo, sent to the authors by Dr. Sergio Mezzalana. The samples present an almost identical lithology and the insects have very similar size and aspect of wing. Otherwise, they came from a correspondent stratigraphical level, apparently the limit between Carboniferous and Permian.

These discoveries lead the senior author to think of a possibility to find the same kind of fauna in the Itarare Group of the Southern States of Brazil. A subsequent search leads to a confirmation of this prediction and two new discoveries were made at the same stratigraphical level: one at Rio Grande do Sul State and another at Santa Catarina. All these fossil insects are under study.

\* Professor do Departamento de Paleontologia e Estratigrafia do Instituto de Geociências da Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil. Trabalho recebido para publicação em 23/2/78.

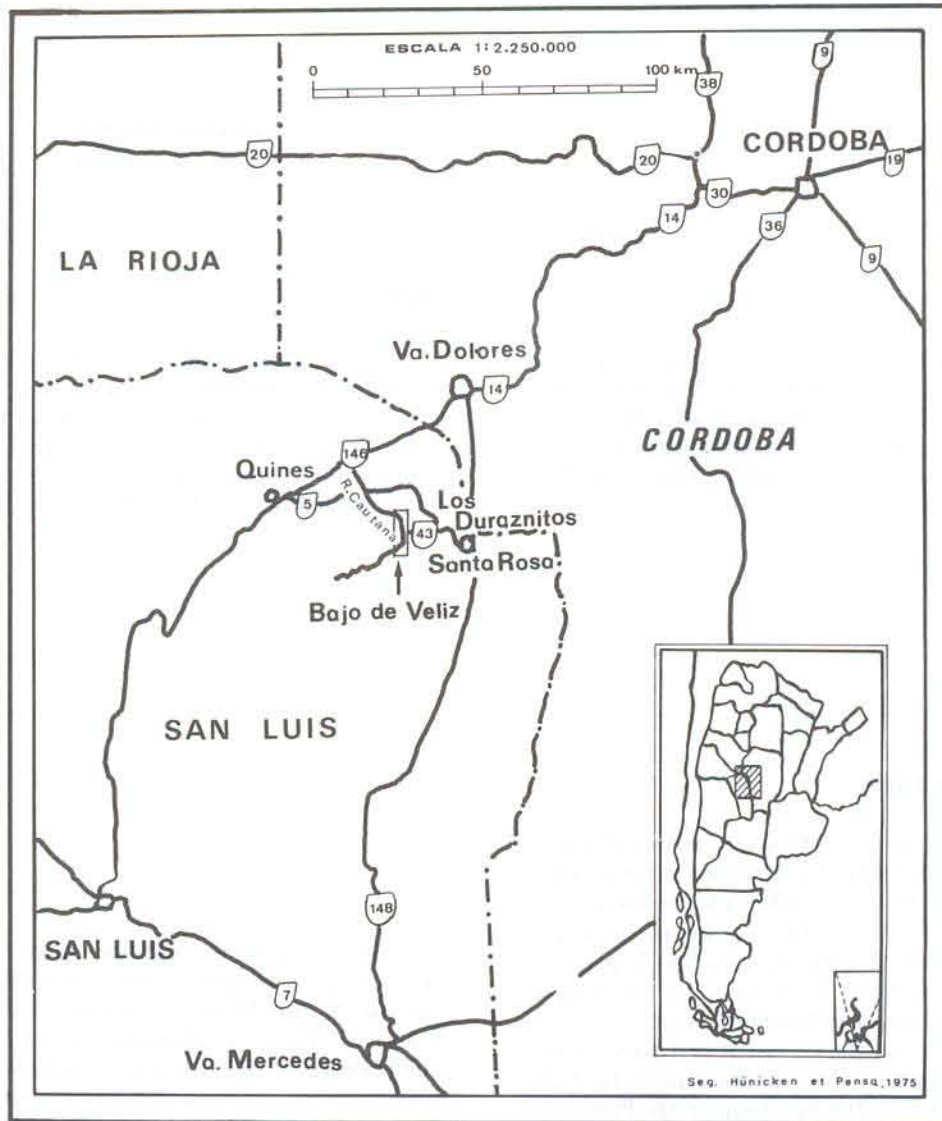


FIG. 1

#### Geographical and Stratigraphical position

The geographical and stratigraphical data are based mainly in Hünicken et Pensa (1975). The locality of Bajo de Veliz is at San Luis province (fig. 1), about 30 km to the west of the village of Santa Rosa. It covers a long narrow depression, in the northeastern zone of Sierra Grande and it is crossed, south to north, by a stream called Arroyo Cautana.

The Bajo de Veliz Formation, approximately 164m thick, rest in discordance over the metamor-

phic embasament. The schistose basament, Pré-Cambrian or Eopaleozoic, has greenish schistose phyllites and micaschistes crossed by pegmatites dikes. It is quite similar at all the area and the beds presents dips of  $40^{\circ}$ ,  $50^{\circ}$  to  $70^{\circ}$ , sometimes they are even in vertical positions (Fig. 2).

Three members are distinguished in Bajo de Veliz Formation (Tab. 1).

## Paleontology

1. The taphoflora listed in the paper of Menendez 1971 p.264-266, is now being revised by S. Archangelsky and O. G. Arrondo and the study under development have already change the list of plants as is registered by Hünicken et Pensa (1975). Menendez (op. cit.) did the palinological study and presents in p.267/8 the list of the specimens described. The main species of plants of Bajo de Veliz presently known based in the authors above mentioned are:

a) The plants (in Hünicken et Pensa, 1975)

*Botrychiopsis plantiana* (Carr.) Arch et Arrondo

(= *Neuropteridium validum* Feistm. (*Gondwanidium plantianum* Carr.)

*Equisetites morenianus* Kurtz.

*Gangamopteris obovata* (Carr.) D. White

*Glossopteris browniana* Brongn.

*Cordaites hislopi* (Bunb.)

*Sphenophyllum thoni* Mahr

*Samaropsis kurtzii* Leguizamón

*Samaropsis* sp.

*Paranocladus* sp. (Walchia sp.)

b) The Palynomorpha Menendez (1971, p.264-266).

### Anteturma SPORITES

#### Turma TRILETES

##### Subturma AZONOTRILETES

###### Infraturma LAEVIGATI

1. *Leiotriletes directus* Balme & Hennesly

###### Infraturma APICULATI

###### Subinfraturma GRANULATI

2. *Granulatisporites* cf. *trisinus* Balme & Hennesly

3. *Cyclogranisporites patelliformis* Menéndez

###### Subinfraturma VERRUCATI

4. *Verrucosisporites* sp.

###### Subinfraturma NODATI

5. *Acanthotriletes filiformes* (Balme & Hennesly) Tiwari

6. *Acanthotriletes* sp.

7. *Apiculatisporis cornutus* (Balme & Hennesly) Höeg & Bose

8. *Apiculatisporis* sp.

###### Subinfraturma BACULATI

9. *Neoraistrickia ramosa* (Balme & Hennesly) Hart

10. *Neoraistrickia* sp.

### Turma ZONALES

#### Subturma ZONOTRILETES

##### Infraturma CINGULATI

11. *Cristatisporites longispinosus* sp. nov.

##### Infraturma ZONATI

12. *Kraeuselisporites sanluisensis* sp. nov.

13. *Kraeuselisporites* sp.

#### Turma MONOLETES

##### Subturma AZONOMONOLETES

###### Infraturma SCULPTATOMONOLETI

14. *Thymospora leopardus* (Balme & Hennesly) Hart

#### Anteturma POLLENITES

#### Turma SACCITES

##### Subturma MONOSACCITES

###### Infraturma TRILETESACCITI

15. *Barakarites rotatus* (Balme & Hennesly) Bharadwaj & Tiwari

16. *Parasaccites methae* (Lele)

17. *Parasaccites* sp.

###### Infraturma VESICULOMONORADITI

18. *Potonieisporites* sp.

###### Infraturma ALETESACCITI

19. *Cordaitina* sp.

20. *Florinites walikalensis* Hoeg & Bose

21. *Florinites elongatus* Menéndez

22. *Densipollenites* sp.

23. *Caheniasaccites oratus* Bose & Kar

24. *Caheniasaccites flavatus* Bose & Kar

##### Subturma DISACCITES

25. *Vestigisporites* sp.

##### Subturma STRIATITES

26. *Protohaplosypinus amplus* (Balme & Hennesly) Hart

27. *Protosacculina* cf. *multistriata* Balme & Hennesly) Potonie

28. *Protosacculina*

29. *Striomonosaccites* sp.

30. *Vittatina latericostata* sp. nov.

#### Turma PLICATES

##### Subturma PRAECOLPATES

###### Infraturma PRAECOLPATI

31. *Pakhapites fusus* (Bose & Kar) nov. comb.

2. The known taphofauna is composed of Insects and one Arachnida. The insects belong to the Narkemidae-Cacurgidae group and to the family Diaphanopteridae; they did not belong to Hymenoptera as was mentioned in the "Atlas de plantas fosiles de la Republica Argentina" by Kurtz, nor to Protohymenoptera as was supposed by Fossa-Mancini (1941).



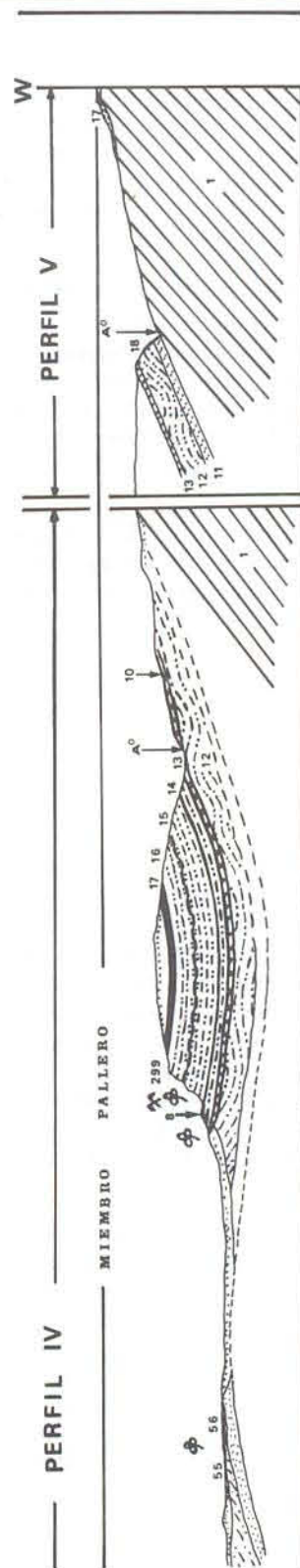
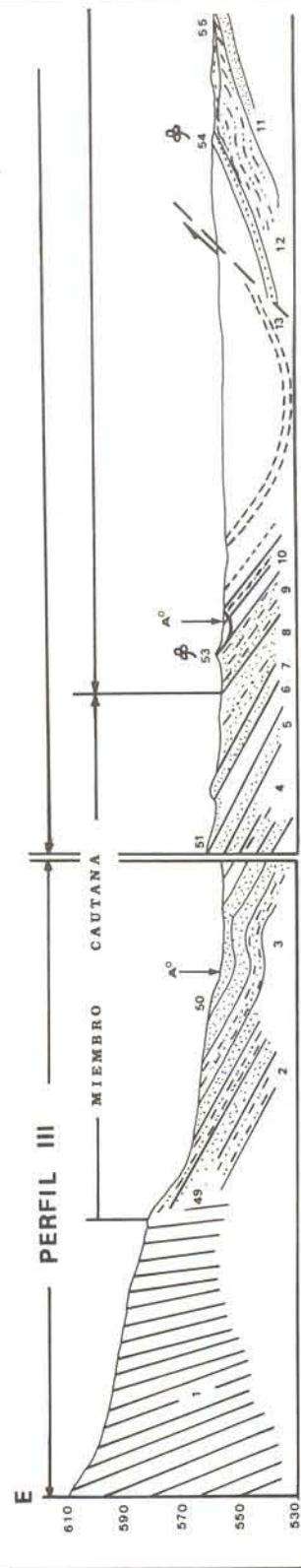
Tab. 1

Fm	Member	Thickness (meters)	Nº at Fig 2	Lithology	Fossils
B A	Lomas	9		Yellowish to light greenish-brown sandstones of medium to coarse grains forming compact banks of 0,5 to 1m thick, presenting cross-bedding stratification. They look like enlarged plank with dips of 5º to 15º.	No fossil yet found
	J O D E	Pallero	53	17 to 9	At the surface grayish to light greenish siltstones and in fresh outcrops dark laminated siltstones with beds of dark gray clayish-shaly slates, interbedded by fine grained hardy sandstones sometimes calcareous in beds 10 to 20 cm thick
Exccencially of grayish to greenish shaly-siltstones commonly laminated looking as varves with concretions of marlekor type with interbedded sandstones					
V E L I Z	Cautana	102	8 to 2	<p>A potent serie of thick beds of massive arkosic sandstones sometimes conglomeratic, light gray and yellow, with thin intercalations of green siltstones finally stratified and many times with concretions</p> <p>Thick beds of greenish siltstones partially sandy and friable with concretions of marlekor type in several levels. Beds, 10 to 20 cm thick of fine compact greenish-gray sandstones commonly with ondulitas</p> <p>Potent polimictic yellow-brown basal conglomerate with clasts medianly round to subangularis (0,5 a 10 cm) and some with 20-30 cm or more, in an arkosic siltic-sandy matrix.</p>	Until now only the "fossil problematico" described by Casas (1950) that probably is a pseudo-fossil

# BAJO DE VELIZ - PROFILES

SCALE 1:2,500

## SECCION A° CAUTANA - CANTERA



Seg. Hüniöken et Fensa, 1975

## Age

### a) Data based in the Taphoflora

Some paleobotanists have attributed a Carboniferous age for the plant assemblage but some others put it in the Lower Permian as Menendez (op. cit.) based in Palynology. However, all these authors not have a conclusive opinion and the data are not been defined.

### b) Data based in the Taphofauna

The insects belong to:

1. **Narkemidae-Cacurgidae** Group which have been found until now only in the Carboniferous of the USA and of the USSR.
2. **Diaphanopteridae** were found only in the Carboniferous of France and of USSR.

The insects are clearly Carboniferous. Otherwise apparently, according to Dr. Hünicken (personal communication) the Arachnida must belong

also to a exclusively Carboniferous group. Based on these facts the authors are convinced that the beds with insects remains are Upper Carboniferous. However must be carefully checked if all the known plants and insects occur exactly at the same horizon because if not, this could explain these age divergences. However if they belong to the same bed the age attributed to the plants must be rechecked.

## Aknowledgments

The authors are very grateful to Prof. Dr. Mario Hünicken, from the Universidad Nacional de Cordoba, for giving them the opportunity to study these fossil insect collections from Argentina.

They are very grateful also to CNPq (Conselho Nacional de Desenvolvimento Científico e Tecnológico), to FAPERGS (Fundação de Amparo à Pesquisa do Estado do Rio Grande do Sul) and to Câmara Especial de Pesquisa e Pós-Graduação da UFRGS (Universidade Federal do Rio Grande do Sul), for the continuous help to their researchs.

## Classis Insecta Infra-classis Palaeoptera Super-orde Megasecopteroidea

### Ordo Diaphanopteroidea

The wings are curved backward and tilted along the body in a relatively small angle with the longitudinal axes of the body. The base of the wing is never pedunculate but sometimes broad, more rarely narrowed; the Sc is shorter than 2/3 of the costal margin of the wing, sometimes not very clear, very rarely long. The anterior margin is convex sometimes with tubercles, rarely straight and costalized. Carboniferous-Permian.

### Sub-orde Eudiaphanopteroidea

Commonly with blunt wings; the costalization is weakly developed. The costal margin is convex with Sc well apart; the radial field is not broadened and without short cross-veins; the cross-veins are numerous sometimes, and sometimes less numerous, but they are always present in the costal field, resembling the branches of Sc and R (in an extreme case a short vein). Carboniferous-Permian.

### Familia Diaphanopteridae Handlirsch, 1906

Sc is equal at about 2/3 of the costal margin. In

the wings round dark spots can be seen, disposed at the various wing fields. The anal veins have the aspect of multiramified branches originated from the same tronc. Carboniferous.

### Genus *Philtasptilon* Zalesky, 1931

#### Diagnosis

Costal margin moderately convex, narrow costal field; Sc linked to R at about 2/3 of the wing length; branches of Rs pectinate; the first branch of Rs, at the point of its origin, is much more remote from MA than it is further distally, they converging distally.

Type-species *Philtasptilon maculosum* Zalesky, 1931

Alykaievskaja Fm., Lower Balachonian, Carboniferous, Kuznetz Basin, Tcheremitchkino, USSR.

#### Occurrence

Lower Balachonian, Carboniferous, Kuznetz Basin, USSR.

Bajo de Veliz Fm., San Luis, Argentina



*Philiasptilon huenickeni* Pinto et Ornellas, sp. nov.  
Pl. I, fig. 1,2

*Designatio nominis:* In honour of  
Prof. Dr. Mario Hünicken, Universidad  
Nacional de Cordoba, Argentina  
*Holotype:* One hind-wing n♀ CORD-PZ  
2100  
*Locus typicus:* Bajo de Veliz, Provincia  
de San Luis, Argentina  
*Stratum typicum:* Bajo de Veliz Fm.

**Diagnosis**

Wing with 35.5mm long and 9.5mm wide, presenting the first branch of Rs and M converging distally; Rs with three branches being the first one bifurcate distally.

**Description**

The species is based in a more or less well preserved wing, which shape suggests a hind-wing: 35.5mm long and 9.5mm wide; costal margin slightly convex; posterior margin not strongly curved; C vein very strong along the margin; Sc ending in R a little beyond the middle length; Rs with three oblique parallel and pectinate branches, the first one bifurcates distally. MA originated before the origin of Rs; it runs in direction to Rs and links slightly to it, diverging away to the costal margin. MA being not parallel to the first branch of Rs but converges distally to it. MP has its extremity not very clear but it seems to present two branches as it is represented in the wing draw; CuA simple; CuP apparently simple, also. Anal veins not clearly seen, apparently they are as represented in dotted lines in Pl.I, fig. 2. Cross-veins spacelly disposed, seen with some difficulty in the costal area.

**Discussion**

The present Species differs from *P. maculosum* Zalessky, 1931 by having Rs with three branches and the first one bifurcates, while that species has Rs

with five simple branches; MP also with less branches. The three other differences: (the number of cross-veins, the curvature of the posterior margin and the spots) can be only problems of observation. Except in a few places, the cross-veins were seen only after very accurate observation on different angles of light incidence. The reconstruction of the posterior margin of *P. maculosum* Zalessky, 1931 (in Rodendorf et alii 1961) appears to be not correct; it possibly has the outline as that one of the present species. The spots in the wing were not surely seen on the present species, they appear to be present in the places showed in the draw (Pl. I, fig. 2)

The species has strong similarity also with the species of *Diaphanoptera* from the Carboniferous of Commeny, differing, however, from them by the number of veins and specially by the convergence between MA and the branch of Rs, what put it in the genus *Philiasptilon*

**Occurrence**

Bajo de Veliz Fm. at Bajo de Veliz, Provincia de San Luis, Argentina.

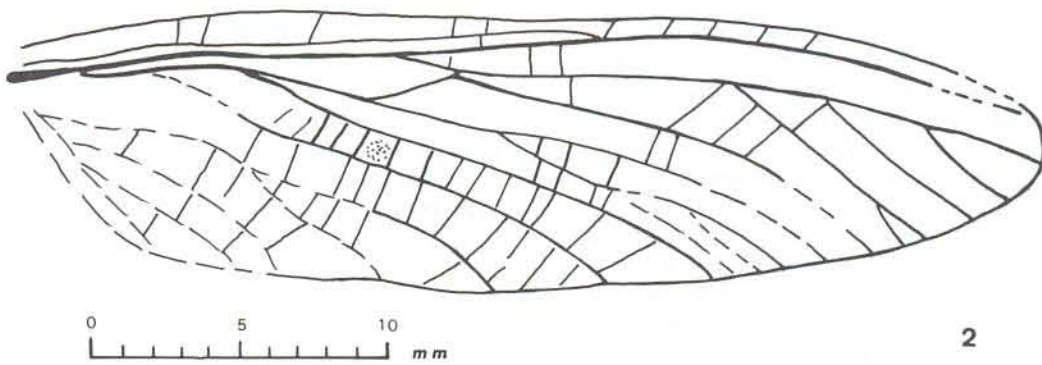
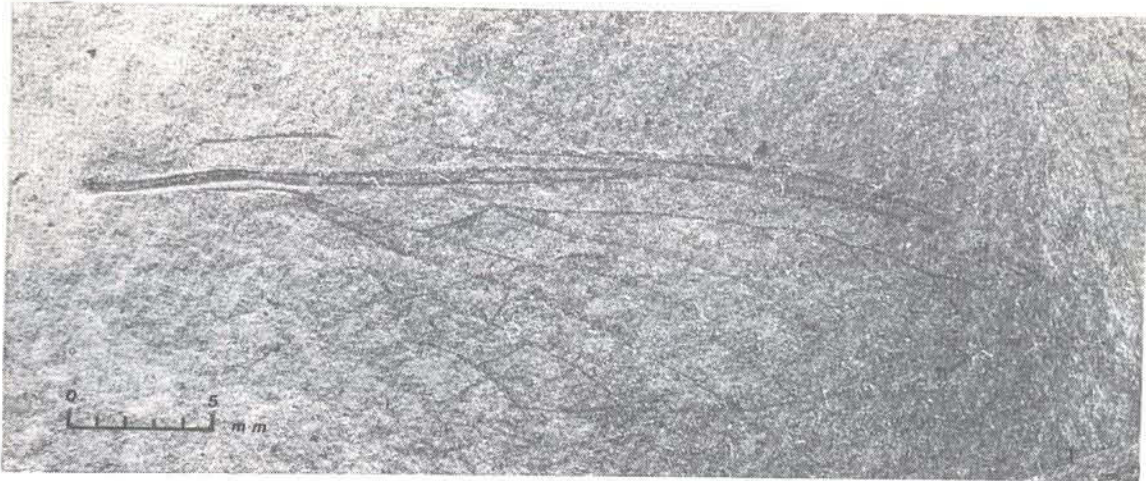
**BIBLIOGRAPHY**

ARCHANGELSKY, S. & ARRONDO, O. G. 1971. Paleophytologia Kurtziana I. Notas sobre los vegetales Carbonicos y Permicos de la coleccion Kurtz. *Ameghiniana*, Buenos Aires, 8 (3/4):181-8.

BRONGNIART, C. 1893. *Recherches pour servir a l'histoire des Insectes Fossiles des temps primaires*. Saint-Etienne, Imprimerie Theolier. v.1, 638p.; v.2 atlas, 44p. pl.17-53.



- CARPENTER, F. M. 1963. Studies on Carboniferous insects of Commeny. France part 5. The genus *Diaphanoptera* and the order Diaphanopteroidea. *Psyche*, 70(4):240-56, pl. 28-30, text-fig.1.
- FOSSA-MANCINI, F. 1941. Noticias sobre Hallazgos de insectos fosiles en la America del Sur. *Notas del Museo de la Plata, Paleontologia*, La Plata, 6(29):101-40, 1 mapa.
- MENENDEZ, C.A. 1971. Estudio palinologico del Permico de Bajo de Velez, Provincia de San Luiz. *Revista del Museo Argentino de Ciencias Naturales "Bernardino Rivadavia", Paleontologia*, Buenos Aires, 1(9):1-306, 6 pl.
- MEUNIER, R. 1909. Nouvelles recherches sur les insectes du Terrain Houiller de Commeny (Allier). *Annales de Paleontologie*, Paris, 4:125-52, 23 text-fig, 5 pl.
- RODENDORF, B. B. 1962. *Classe insecta*. Osnovi Paleontologii, Izd. Akad. Nauk USSR, Moscou. p.29-374, text-fig. 17.1151, pl.1-17. (In russian.)
- ; BECKER-MIGDISOVA, E. E.; MARTINOVA, O. M.; SHAROV, A. G. 1961. *Paleozoic insects from Kuznetzk basin*. Trudy Pal. Inst. Akad. Nauk USSR, 85:1-705, 501 text-fig., tab. 1-11. (In russian.)
- ZALESSKY, M. 1931. On insects found at the coal deposits of the Kuznetz basin and the age based on the entomofauna. *Biol. Mosk. Prirody*, 3/4:399-406, text-fig. (In russian.)



*Philiaspilon huenickeni* Pinto et Ornellas, sp.nov.  
Bajo de Velez Fm., Upper Carboniferous, Pcia. San Luis,  
Argentina.

Fig. 1 - Photo of the wing. Holotype Universidad Nacional de  
de Cordoba, n° CORD-PZ-2100.

Fig. 2 - Drawing of the same.