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ON THE LOCATIONS OF THE OESOPHAGEAL GLAND NUCLEI IN THE ORDER MONONCHIDA (NEMATODA)

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INTRODUCTION

Loof & Coomans (1968, 70) were the first to give an exhaustive and systematic account of oesophageal glands and their orifices in many species of different genera and families of the suborder Dorylaimina. Their study also included five species of mononchs because they were considered under Dorylaimina. Since then Loof & Jairajpuri (1968), Baqri & Jairajpuri (1969), Coomans & Loof (1970), Siddiqi (1969), Loof & Coomans (1972), Baqri & Coomans (1973) and others have contributed informations on this aspect and noted the consistency of these structures in different groups.

In the present work, an attempt has been made to provide informations, wherever possible, about the locations of oesophageal glands and their orifices in the species of Mononchida present in the National Collection of Zoological Survey of India and Department of Zoology, Aligarh Muslim University, Aligarh (U. P.). A total of 20 species belonging to 11 genera and 6 families of two suborders (Mononchina and Bathyodontina) have been studied. Since the order Mononchida includes only about 30 genera, the present study gives a good account of informations on the distribution of oesophageal gland nuclei and their orifices.

OBSERVATIONS

The general plan of nuclei and orifices in mononchs : The oesophagus in its posterior half consists of five (one celled) glands of different size and shape, i.e., one gland in the dorsal sector and four arranged in two pairs in the ventro-sublateral sectors. The nucleus/nucleolus of each gland becomes visible upon careful examination of the oesophagus.

The dorsal gland (DN) is the anterior most of the five, except in the members of suborder Bathyodontina where it may be situated even below the first pair of subventral glands. It is comparatively larger in size. The orifice of the dorsal gland (DO) is always well visible in the lumen anterior to dorsal gland (DN). The first pair of subventral glands (S_1N) are smaller in size and situated far below their orifices (S_1O). These two glands (S_1N) are located almost at the same level. The second pair of subventral glands (S_2N) is situated near the base of oesophagus or at about 90% or more of the oesophageal from anterior extremity. The orifices of the second pair (S_2O) are very close and generally situated slightly posterior to their glands but may be either at the level of S_2N or even far anterior. The S_2N are comparatively bigger than S_1N.

The locations are given below in percentage calculated from the total oesophageal length.

Suborder MONONCHINA

Family : MONONCHIDAE Chitwood, 1937

1. Genus **Mononchus** Bastian, 1865

1. 1. **Mononchus truncatus** Bastian, 1865

(Text-fig. 1)

Specimens observed : Four females. Total oesophageal length 382-415 μm. Location as follows :

DO=59.0-60.9	S_1O=69-73	S_2N=90-93
DN=62.5-66.2	S_1N=80-83	S_2O=93-94
DO-DN=3.6-5.5	S_1N-S_1O=8.8-10.6	

2. Genus **Prionchulus** (Cobb, 1917) Wu & Hoeppli, 1929

2. 1. **Prionchulus muscorum** (Cobb, 1917) Wu & Hoeppli, 1229

(Text-fig. 2)

Specimens observed : Five females. Total oesophageal length 412-442 μm. Locations as follows :

DO=56.6-58.4	S_1O=72-77	S_2N=94-95
DN=60.7-62.7	S_1N=83-88	S_2O=95-96
DO-DN=3.9-4.8	S_1N-S_1O=10.1-10.9	

2. 2. **Prionchulus longus** (Thorne, 1929) Andrassy, 1958

(Text-fig. 3)

Specimens observed : Two females. Total oesophageal length 554-567 μm. Locations as follows :

DO=53.2-55.0	S_1O=70-71	S_2N=94
DN=57.7-60.1	S_1N=80-81	S_2O=96
DO-DN=4.5-5.1	S_1N-S_1O=9.9-11.4	

3. Genus **Clarkus** Jairajpuri, 1970

3. 1. **Clarkus papillatus** (Bastian, 1865) Jairajpuri, 1970

(Text-fig. 5)

Specimens observed : Three females. Total oesophageal length 281-354 μm. Locations as follows :

DO=58.9-60.8	S_1O=72-74	S_2N=94-95
DN=65.2-66.9	S_1N=83-85	S_2O=95-96
DO-DN=4.8-6.1	S_1N-S_1O=10.5-10.6	

3. 2. **Clarkus sheri** (Mulvey, 1967) Jairajpuri, 1970

(Text-fig. 4)

Specimen observed : One female. Total oesophageal length 487 μm. Locations as follows :

DO=59.7	S_1O=71	S_2N=97
DN=62.4	S_1N=81	S_2O=98
DO-DN=2.7	S_1N-S_1O=10.3	

Family : COBBONCHIDAE Jairajpuri, 1969

4. Genus **Cobbonchus** Andrássy, 1958

4. 1. **Cobbonchus indicus** Baqri, Baqri & Jairajpuri, 1978

(Text-fig. 6)

Specimens observed : One female and one male. Total oesophageal length 324-325 μm. Locations as follows :

DO=54.1-55.2	S_1O=73-74	S_2N=93-94
DN=61.7-62.6	S_1N=85	S_2O=97
DO-DN=6.5-8.5	S_1N-S_1O=10.2-11.4	

Family : MYLONCHULIDAE Jairajpuri, 1969

5. Genus **Mylonchulus** (Cobb, 1916) Altherr, 1953

5. 1. **Mylonchulus nainitalensis** Jairajpuri, 1970

(Text-fig. 8)

Specimens observed : Three females. Total oesophageal length 283-314 μm. Locations as follows :

DO=56.6-57.6	S_1O=71-72	S_2N=91-93
DN=61.4-63.1	S_1N=81-83	S_2O=92-93
DO-DN=4.8-5.6	S_1N-S_1O=9.9-10.6	

5. 2. **Mylonchulus agriculturae** Coetzee, 1967

(Text-fig. 9)

Specimens observed : Three females. Total oesophageal length 310-389 μm. Locations as follows :

DO=56.1-56.8	S_1O=70-73	S_2N=90-93
DN=59.3-60.3	S_1N=78-81	S_2O=92-93
DO-DN=3.3-3.5	S_1N-S_1O=8.0-9.0	

5. 3. **Mylonchulus mulveyi** Jairajpuri, 1970

(Text-fig. 10)

Specimens observed : Five females. Total oesophageal length 287-322 μm. Locations as follows :

DO=53.1-56.4	S_1O=66-70	S_2N=90-93
DN=58.2-62.0	S_1N=76-79	S_2O=93-95
DO-DN=4.9-6.4	S_1N-S_1O=9.1-11.0	

5. 4. **Mylonchulus lacustris** (N. A. Cobb in M. V Cobb, 1915) Andrássy, 1958

(Text-fig. 11)

Specimens observed : Four females. Total oesophageal length 321-390 μm. Locations as follows :

DO=50.1-55.3	S_1O=63-68	S_2N=90-93
DN=54.8-59.3	S_1N-74-78	S_2O=92-94
DO-DN=4.0-5.5	S_1N-S_1O=9.3-10.9	

5. 5. **Mylonchulus striatus** (Thorne, 1924) Andrássy, 1958

(Text-fig. 12)

Specimen observed : One female. Total oesophageal length 285 μm. Locations as follows :

DO=57.1	S_1O=70	S_2N=92
DN=63.5	S_1N=79	S_2O=92
DO-DN=6.4	S_1N-S_1O=8.7	

5. 6. **Mylonchulus brachyuris** (Butschili, 1873) Altherr, 1953

(Text-fig. 13)

Specimens observed : Two females. Total oesophageal length 338-342 μm. Locations as follows :

DO=58.7-59.0	S_1O=71	S_2N=90-91
DN=62.8-63.1	S_1N=79-84	S_2O=93
DO-DN=3.8-4.4	S_1N-S_1O=7.9-12.8	

6. Genus **Sporonchulus** (Cobb, 1917) Pennak, 1953

6. 1. **Sporonchulus ibitensis** (Carvalho, 1956) Andrassy, 1958

(Text-fig. 7)

Specimens observed : Four females. Total oesophageal length 261-294 μm. Locations of follows :

DO=58.9-62.2	S_1O=70-73	S_2N=91-94
DN=64.1-67.7	S_1N=82-87	S_2O=94-97
DO-DN=4.1-5.7	S_1N-S_1O= 9-15	

Family : ANATONCHIDAE Jairajpuri, 1969

7. Genus **Anatonchus** (Cobb, 1916) De Coninck, 1939

7. 1. **Anatonchus gynglymodontus** Mulvey, 1961

(Text-fig. 14)

Specimens observed : Two females and one male. Total oesophageal length 561-608 μm. Locations as follows :

DO=52.3-53.0	S_1O=69-71	S_2N=94
DN=56.1-57.1	S_1N=80-83	S_2O=95-96
DO-DN=3.1-4.8	S_1N-S_1O=10.2-13.0	

8. Genus **Miconchus** Andrássy, 1958

8. 1. **Miconchus thornei** Mulvey & Jensen, 1967

(Text-fig. 15)

Specimens observed : Two females. Total oesophageal length 439-516 μm. Locations as follows :

DO=49.6-52.1	S_1O=70-72	S_2N=93-94
DN=52.6-56.9	S_1N=80	S_2O=96
DO-DN=2.5-4.3	S_1N-S_1O=8-10	

Family : Iotonchidae Jairajpuri, 1969

9. Genus **Iotonchus** (Cobb, 1916) Altherr, 1950

9. 1. **Iotonchus longicaudatus** Baqri, Baqri & Jairajpuri, 1978

(Text-fig. 16)

Specimens observed : Four females. Total oesophageal length 259-305 μm. Locations as follows :

DO=52.5-55.4	S_1O=71-74	S_2N=92-94
DN=62.1-64.7	S_1N=82-84	S_2O=95-97
DO-DN=9.0-10.2	S_1N-S_1O=10.2-10.6	

9. 2. **Iotonchus brachylaimus** (Cobb, 1917) Andrassy, 1958

(Text-fig. 17)

Specimens observed : One female and two males. Total oesophageal length 547-647 μm. Locations as follows :

DO=47.2-50.5	S_1O=67-71	S_2N=91-93
DN=55.7-59.3	S_1N=79-84	S_2O=95-96
DO-DN=8.5-8.8	S_1N-S_1O=11-17	

9.3. **Iotonchus coomansi** Baqri, Baqri & Jairajpuri, 1978

(Text-fig. 18)

Specimens observed : Four females. Total oesophageal length 234-254 μm. Locations as follows :

DO=54.8-58.6	S_1O=70-71	S_2N=95-97
DN=62.1-64.1	S_1N=80-85	S_2O=96-97
DO-DN=6.0-7.5	S_1N-S_1O=12.8-15. 4	

The S_2N are either situated at the level of S_2O or slightly above.

10. Genus **Parahadronchus** Mulvey, 1978

10.1. **Parahadronchus shakili** (Jairajpuri, 1969) Mulvey, 1978

(Text-fig. 19)

Specimens observed : Three females and one male. Total oesophageal length 546-615 μm. Locations as follows :

DO=47.8-50.0	S_1O=66-69	S_2N=91-94
DN=56.3-58.6	S_1N=80-81	S_2O=94-96
DO-DN=6.3-9.2	S_1N-S_1O=11.7-13.3	

The species of the genera *Iotonchus* and *Parahadronchus* of the family Iotonchidae share a character that DN lies comparatively far behind DO, i.e., near about middle of DO-S_1O.

Suborder BATHYODONTINA

Family : MONONCHULIDAE (De Coninck, 1965)

11. Genus **Mononchulus** Cobb, 1918

11.1. **Mononchulus nodicaudatus** (v. Daday, 1901) Schneider, 1937

(Text-fig. 20)

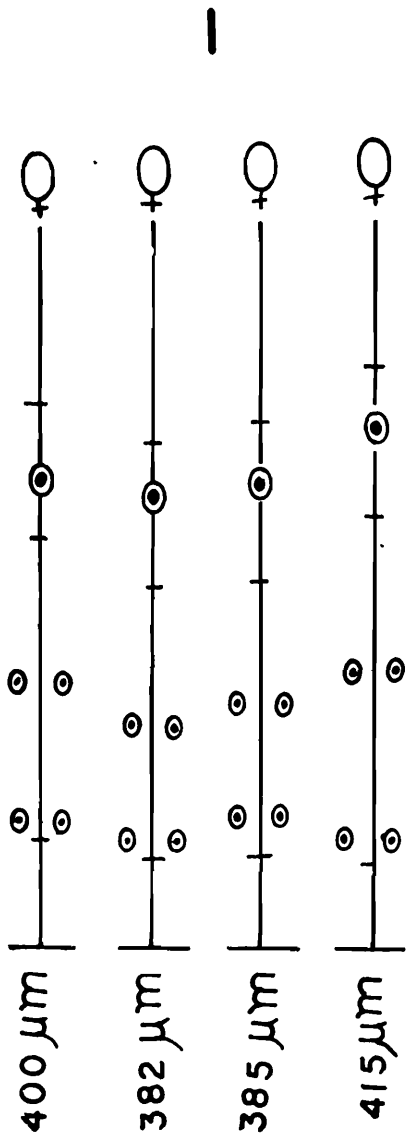
Specimens observed : Five females. Total oesophageal length 285-310 μm. Locations as follows :

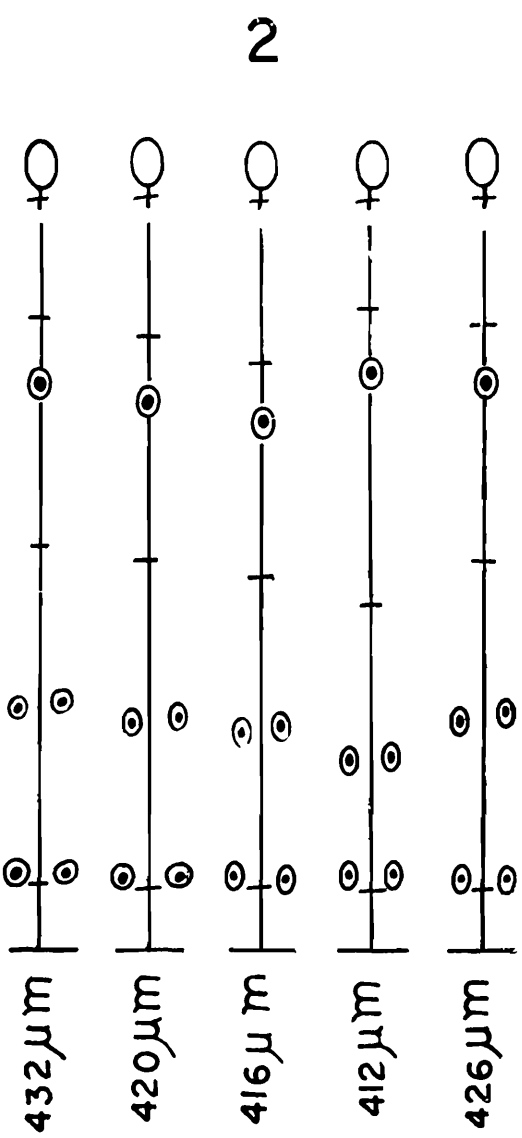
DO=46.4-53.3	S_1O=62-64	S_2N=91-93
DN=74.6-77.8	S_1N=76-77	S_2O=91-92
DO-DN=22.5-29.2	S_1N-S_1O=12.1-13.4	

The DN is far behind from DO, even slightly posterior to S_1N. The S_2N are either situated at level of S_2O or slightly below.

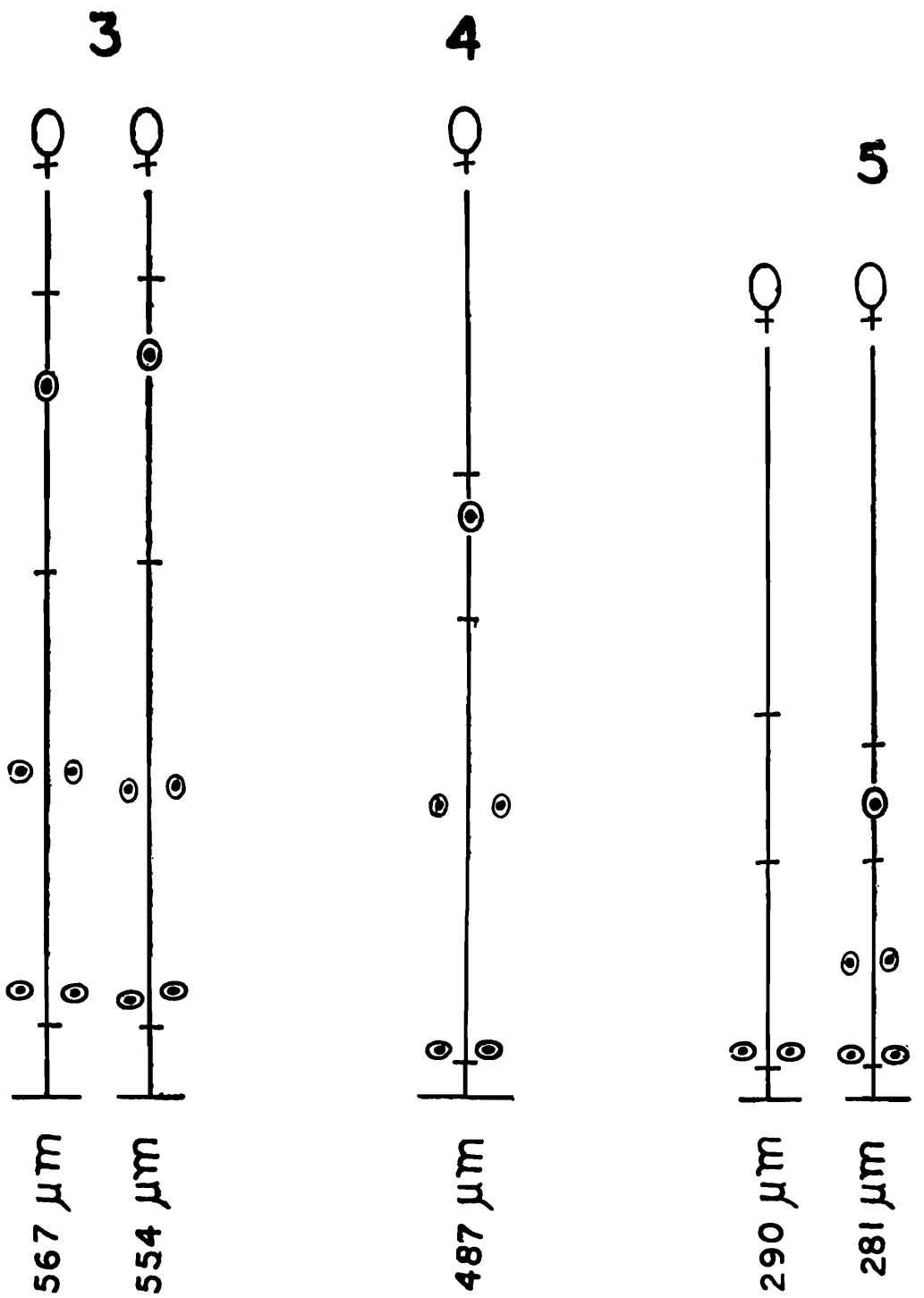
SUMMARY

The locations of oesophageal gland nuclei and their orifices have been studied in 20 species belonging to 11 genera, 6 families of the order Mononchida. The distance between S_1O and S_1N is about 10% or more of the total oesophageal length. The dorsal gland (DN) lies between DO and S_1O in the suborder Mononchina whereas in the suborder Bathyodontina, family Mononchulidae, the DN is always situated posterior to S_1O at about the level of S_1N. In the species of the genera *Iotonchus* and *Parahadronchus*, family Iotonchidae, DN is comparatively located far behind from DO, i. e., near the middle of DO-S_1O.

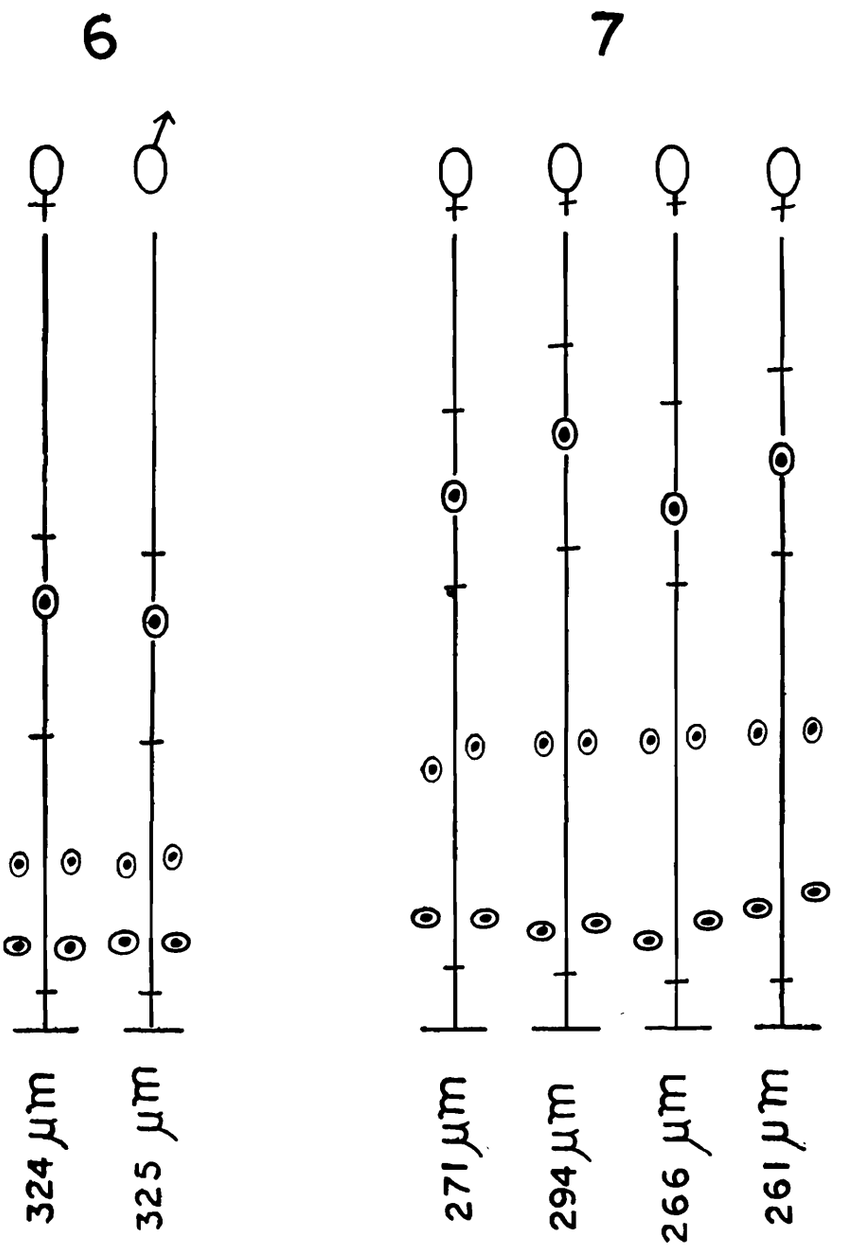




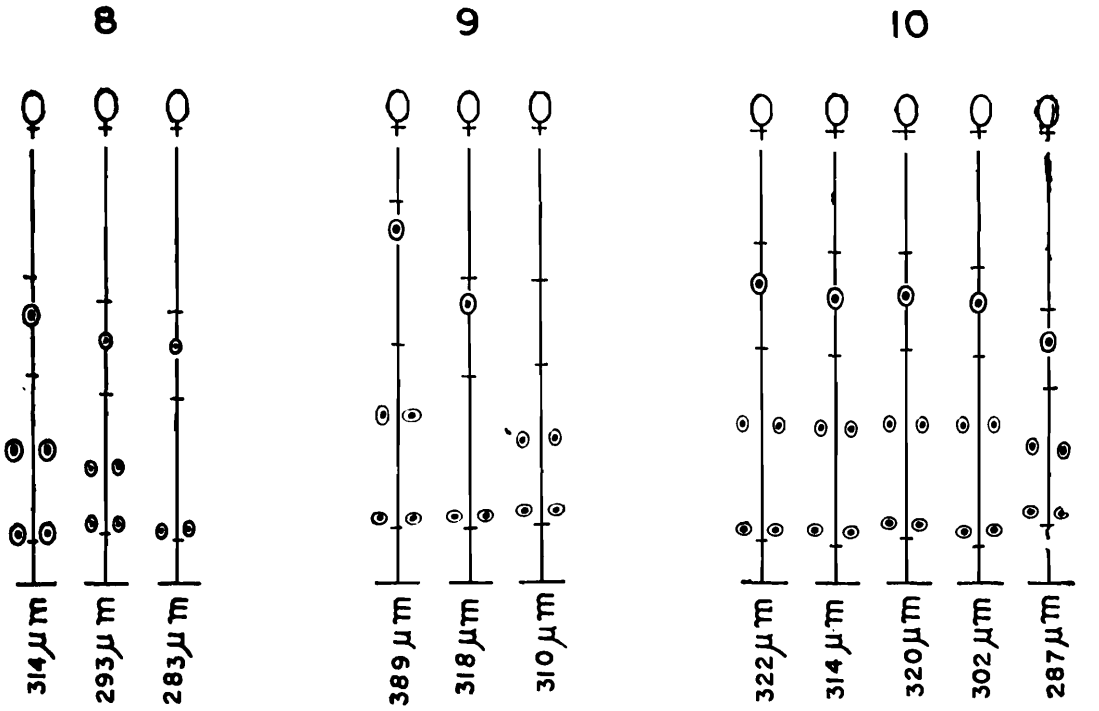
Text-fig. 1. *Monochus truncatus* ; Text-fig. 2. *Prionchulus muscorum*.



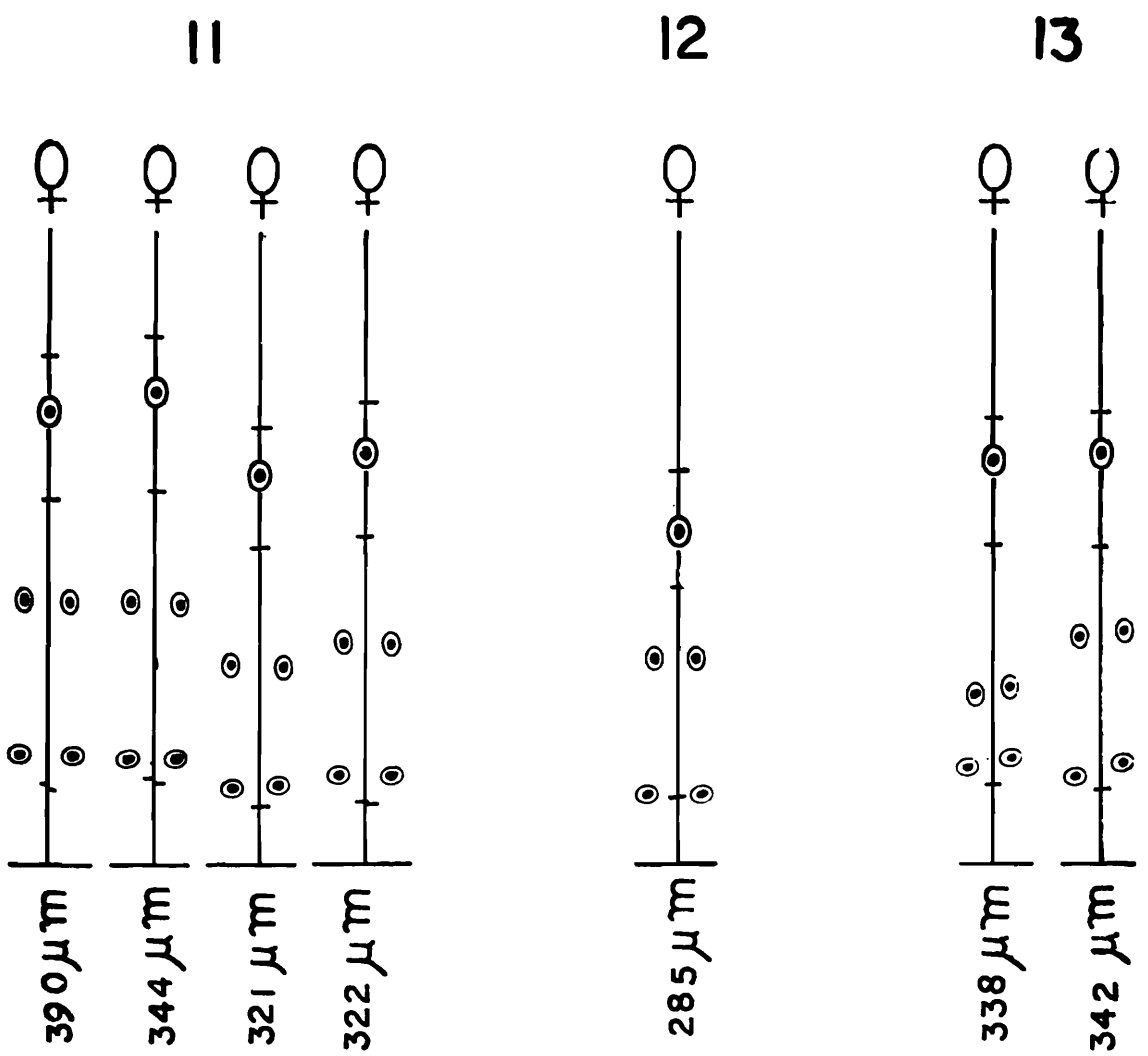
Text-fig. 3. *Prionchulus longus* ; Text-fig. 4. *Clarkus sheri* ; Text-fig. 5. *Clarkus papillatus*.



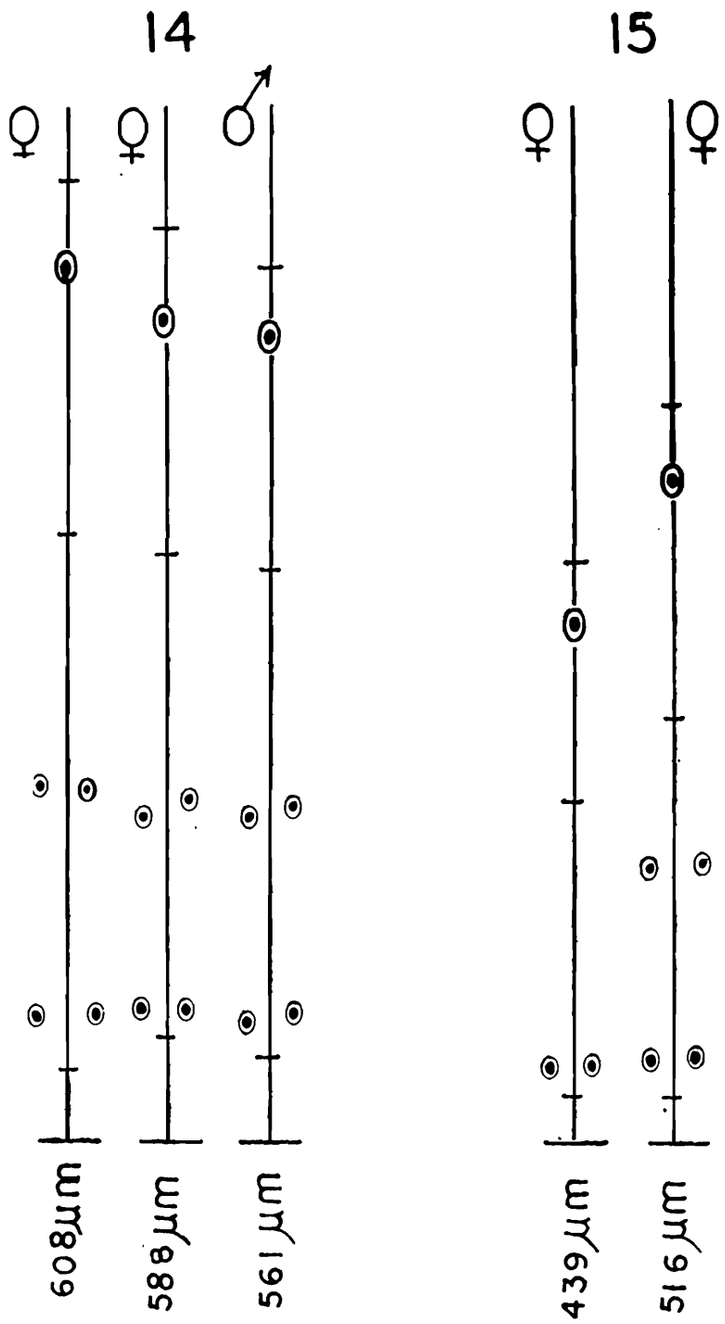
Text-fig. 6. *Cobbonchus indicus* ; Text-fig. 7. *Sporonchulus ibitensis.*



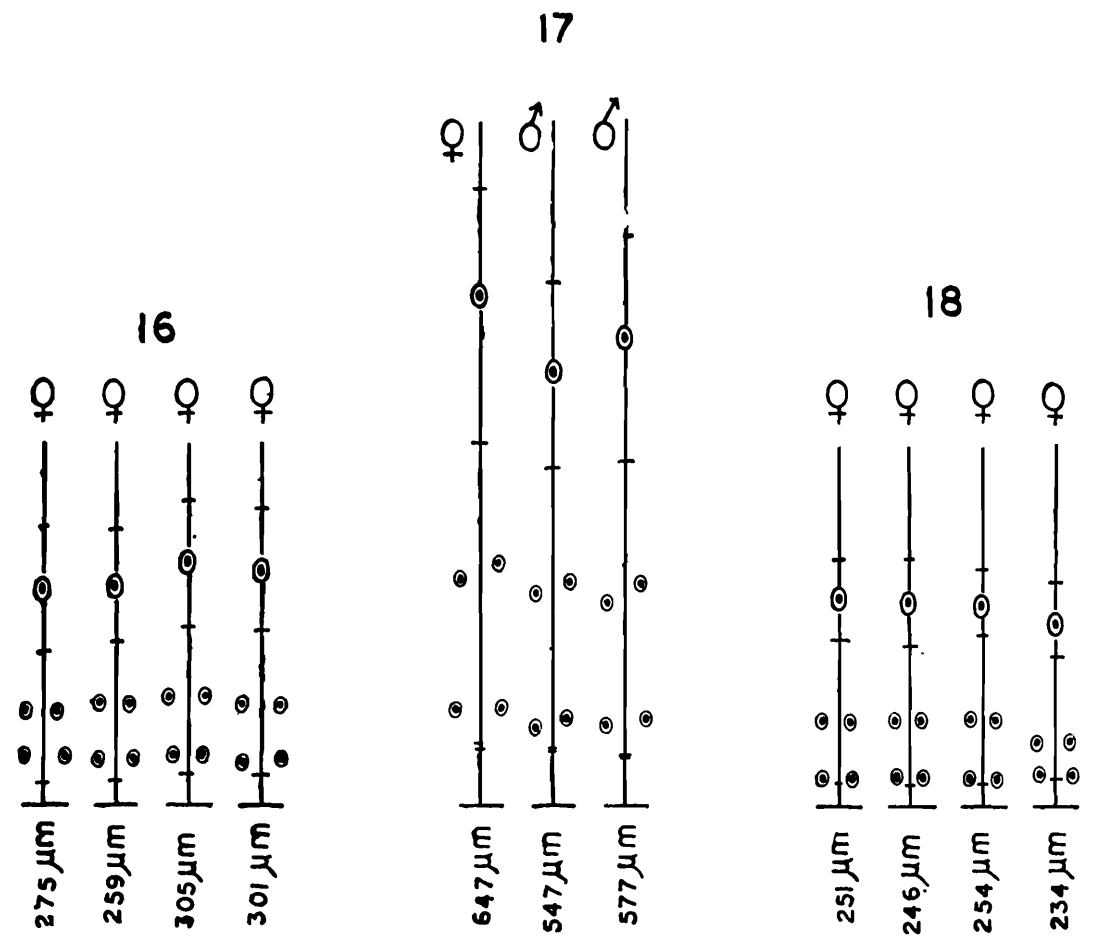
Text-fig. 8. *Mylonchulus nainitalensis* ; **Text-fig. 9.** *Mylonchulus agriculturae* ; **Text-fig. 10.** *Mylonchulus mulveyi.*



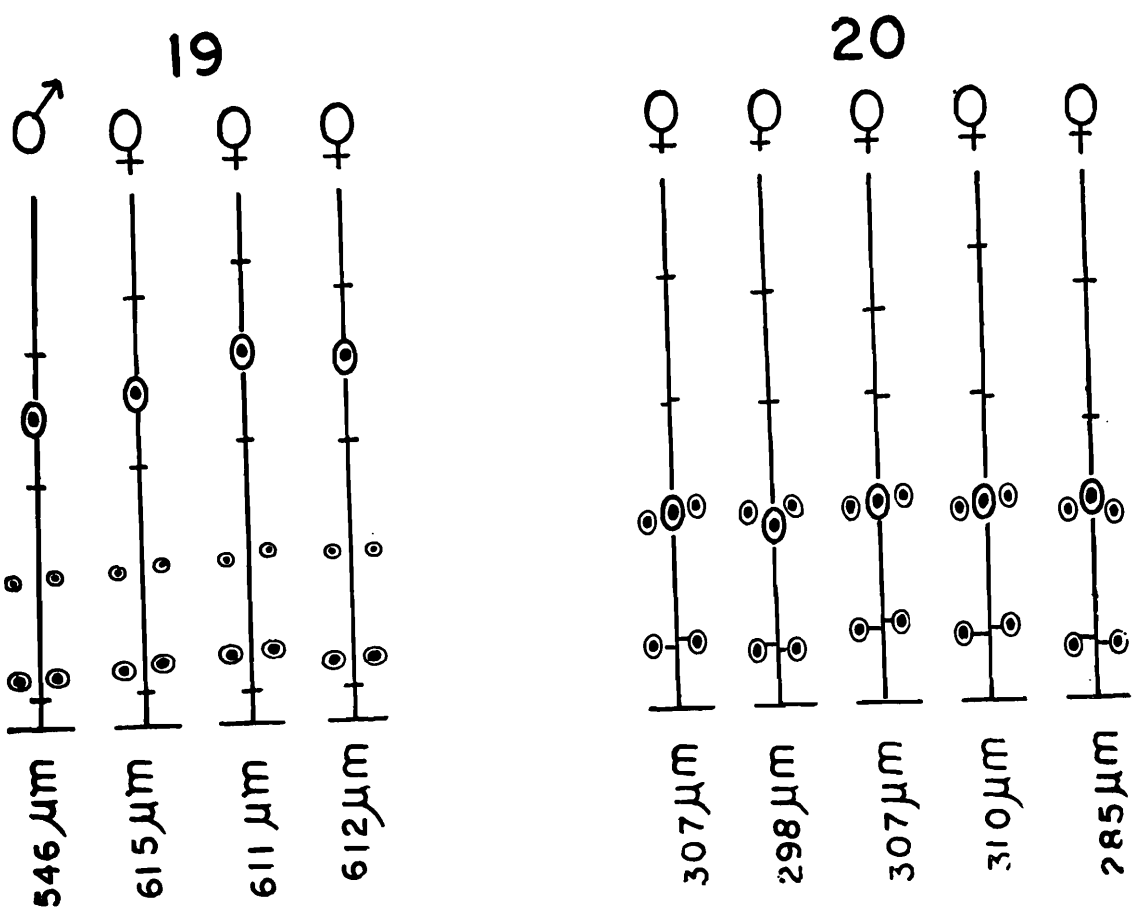
Text-fig. 11. *Mylonchulus lacustris* ; **Text-fig. 12.** *Mylonchulus striatus* ; **Text-fig. 13.** *Mylonchulus brachyurus.*



Text-fig. 14. *Anatonchus gynglymodontus* ; Text-fig. 15. *Miconchus thornei.*



Text-fig. 16. *Iotonchus longicaudatus* ; Text-fig. 17. *Iotonchus brachylaimus* ; Text-fig. 18. *Iotonchus coomansi.*



Text-fig. 19. *Parahadronchus shakili* ; Text-fig. 20. *Mononchulus nodicaudatus.*

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