PART I

LYTOCESTIDAE
PHYLLOBOTHRIIDAE
TENTACULARIDAE
Cotyloda Wardle, McLeod and Radinovsky, 1974.

Caryophyllidea Beneden (In Olsson, 1893).

Lytocestidae Hunter, 1927 (as Lytocestinae)

Lytocestoides Baylis, 1928.

L. narcinei n.sp.

INTRODUCTION

The genus Lytocestoides is erected by Baylis, 1927 with its type species L. taganyikae from a fresh water fish Alestes sp. in Africa. Then Shinde, 1972 reported L. aurangabadensis and L. aurangabadensis minor from Barbus collus and L. aurangabadensis minuta from Labeo calbasu at Aurangabad, India. Later on Shinde and Deshmukh, 1975 added one species to this genus L. paithanensis from Pseudotropius taskree at Paithan, India.

DESCRIPTION

Five worms were collected from spiral valve of the marine fish Narcine brunnea at Waltair, (A.P.), India, in the month of April, 1982.
The worms are with a single segment, broad at middle and tapering at posterior and anterior end and measure 5.824 x 0.582 - 0.835 in length and breadth. The head is round at anterior end, short, without longitudinal furrows, no clear demarcation in between the head and the worm and measures 0.241 x 0.485 in length and breadth. The testes are 120 - 130 in number, preovarian and few postovarian, round in shape, in three to four rows, situated in the central medulla, in a single field, extend laterally, up to the subcorticular region and up to the anterior tip, except the cirrus pouch region and absent in the posterior one sixth region of the worm and measure 0.048 - 0.145 in diameter. The cirrus pouch is oval in shape, elongated, medium in size and placed just anterior to the middle of worm, extends upto the subcorticular region and measures 0.241 x 0.171 - 0.121 in length and breadth. The cirrus is thin, zig-zag and measures 0.241 x 0.014 in length and breadth. The vas deferens is long, zig-zag, thin, extends upto the medullary region, runs obliquely up to a long distance and measures 0.533 x 0.009 in length and breadth.
Lytocestoides narcinei n.sp.

1. Anterior part
2. Middle part
3. Posterior part
The ovary is large, bilobed, lobes with acini, posterior to cirrus pouch, equal, situated just posterior to the middle of the worm and measures 0.631 x 0.265 - 0.291 in length and breadth. The vagina is a thin tube, posterior to cirrus pouch, enlarges near the genital pore, runs obliquely opens in to the ootype and measures 0.970 x 0.024 in length and breadth. The genital pores are oval, situated just anterior to middle, marginal and measure 0.172 x 0.029 in length and breadth. The ootype is round, medium in size, preovarian, compact, situated on isthmus and measures 0.172 in diameter.

The vitellaria are follicular, oval in shape, medium in size, placed at two lateral sides of the worm, in 3 - 4 rows, extend from anterior to the posterior end of the worm and measure 0.033 - 0.048 x 0.024 - 0.033 in length and breadth.

**DISCUSSION**

1. The worm under discussion is having the head round, short, wide, without longitudinal furrows; testes 120 - 130, large, round, preovarian, upto anterior tip of worm and few postovarian; ovary
bilobed, large, lobes with acini; situated just posterior to the middle of the worm; vitellaria follicular in 3–4 rows on each side but occupy entire space of 1/6 posterior region of the worm; cirrus pouch oval, marginal, situated just anterior to middle of the worm.

2. The present cestode differs from *L. tanganyikae* which is having head short, conical, with furrows, devoid of locular depressions; testes numerous, extending all round in peripheral medulla, between uterus and base of scolex; cirrus pouch not reported; ovary indistinctly bilobed, medullary, at one fifth from posterior end; uterus coiled; posterior and anterior to ovary but not anterior to cirrus pouch and vitellaria extending through out in corticular parenchyma except for scolex.

3. The present cestode differs from *L. aurangabadensis* which is having head roughly triangular, absence of longitudinal furrows; testes about 300, from posterior end to the base of head; cirrus pouch oval, situated at one third of body; ovary clearly bilobed, with small,
blunt acini, at one fourth from posterior end; vagina not clearly seen; uterus coiled, posterior and not anterior to the cirrus pouch and vitellaria granular, extend all along the length.

4. The present form differs from _L. aurangabadensis minor_ which is having head conical, roughly triangular, absence of longitudinal furrows, testes 200 - 210 from posterior end to anterior end of the worm, even in the region of head; cirrus pouch oval, situated at one third from posterior; ovary clearly bilobed, with small, blunt acini, at posterior one fifty; uterus coiled, posterior and anterior to ovary but posterior to cirrus pouch and the vitellaria granular, extend through out the parenchyma.

5. The present form differs from _L. aurangabadensis minuta_ which is having head roughly rounded, absence of longitudinal furrows, testes 325 - 350, from posterior end to the base of head; cirrus pouch oval, situated at posterior one third; ovary clearly bilobed, with small, blunt acini, at posterior one fifth; uterus coiled, posterior and anterior to ovary but not anterior to cirrus pouch and vitellaria granular, through out the parenchyma.
6. The present worm differs from *L. paithanensis* which is having head rounded, short, devoid of longitudinal furrows; testes about 400, from posterior end to anterior one; cirrus pouch oval, at posterior one eighth, uterus not seen and vitellaria granular, extend throughout the parenchyma.

These characters are enough to erect a new species for these worms and hence the name *L. narcinei* n.sp. is proposed after the generic name of the host.

<table>
<thead>
<tr>
<th>Type species</th>
<th>Lytocestoides narcinei n.sp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td>Narcine brunnea Henle</td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve</td>
</tr>
<tr>
<td>Locality</td>
<td>Waltair, A.P., India</td>
</tr>
<tr>
<td>Date of collection</td>
<td>29th April, 1982</td>
</tr>
</tbody>
</table>
Cotyloda
Wardle, McLeod and Radinovsky, 1974.
Canyophyllideae
Beneden (In Olsson, 1893).
Lytocestidae
Hunter, 1927 (as Lytocesticae)
Lytocestoides
Baylis, 1928.
L. sopani n.sp.

DESCRIPTION

Seven worms were collected from the spiral valve of Narcine brunnea at Waltair, (A.P.), India.

The worms are with a single segment, broad at anterior and tapering at posterior end. The worms are flat, longer than broad and measure 4.54 - 5.07 x 0.37 - 0.68 in length and breadth. The head is round short, without longitudinal furrows, slightly broad at base and narrow at anterior end and measures 0.037 x 0.454 in length and breadth. There is no marked distinction between head and main body. The body tapers gradually towards the posterior end.

The testes are 100 - 110 in number, pre-ovarian as well as post-ovarian, more preovarian and less post-ovarian, round in shape, situated in the central medulla, in a single field, extend laterally upto subcortricular region and measure 0.057 - 0.113 in
diameter. The cirrus pouch is big, oval in shape, transversely placed, elongated, situated at middle of the worm and marginal. The cirrus is some what curved, long, thick, unarmed and measures 0.492 x 0.030 in length and breadth. The vas deferens long, extends up to the sub corticular region, runs towards the anterior side of the worm and measures 0.492 x 0.022 in length and breadth. The genital pores are at the middle of the worm and measure 0.188 x 0.075 in length and breadth.

The ovary is bilobed, lobes with acini, posterior to cirrus pouch, unequal situated almost at 1/3 from posterior end of the worm, extends up to the sub corticular region, laterally and measures 0.340 - 0.037 x 0.090 - 0.113 in length and breadth. The vagina starts from the genital atrium, posterior to cirrus pouch, a thin tube, runs transversely, up to the middle of the segment, then takes a curve posteriorly, runs obliquely, opens into ootype and measures 0.767 x 0.030 in length and breadth. The ootype is small, postovarian, placed between two ovarian lobes and measures 0.053 in diameter.

The vitellaria are follicular, in two rows, extend from the base of the head to the posterior end of the worm. The vitellaria are preovarian as well as postovarian. The preovarian vitellaria measure
Lytocestoides sepant n.sp.

1. Entire worm
0.037 - 0.075 x 0.030 - 0.037 in length and breadth. Much more vitellaria are post-ovarian, completely filling the posterior one third part of the worm, round in shape and measure 0.037 - 0.075 in diameter.

**Discussion**

1. The present worm under discussion is having the head round, short, wide, without longitudinal furrows, testes 100 - 120, large, round, preovarian, up to anterior tip of worm, cirrus pouch oval, marginal, situated at middle of the worm, ovary bilobed, large, with acini, situated almost at 1/3 of posterior; vitellaria follicular, in 3-4 rows on each side anteriorly, posterior 1/3 completely filled with vitelline follicles.

2. The present form differs from *L. tanganyikae* which is having head short, conical, with furrows, devoid of follicular depressions; testes numerous, extending all round in peripheral medulla, between uterus and base of scolex; cirrus pouch is not reported; ovary indistinctly bilobed, medullary, at one fifth from posterior end; uterus coiled, posterior and anterior to ovary but not anterior to cirrus pouch and vitellaria extending throughout in cortical parenchyma except for scolex.
3. The present worm differs from *L. aurangabadensis* which is having head roughly triangular, absence of longitudinal furrows; testes about 300, from posterior end to the base of head; cirrus pouch oval, situated at one third of body; ovary clearly bilobed, with small, blunt acini, at one fourth from posterior end; vagina not clearly seen; uterus coiled, posterior and anterior to ovary and not anterior to the cirrus pouch and vitellaria granular, extend all along the length.

4. The present form differs from *L. aurangabadensis minor* which is having head conical, roughly triangular, absence of longitudinal furrows; testes 200 - 210, from posterior end to anterior end of the worm, even in the region of head; cirrus pouch oval; situated at one third from posterior; ovary clearly bilobed, with small, blunt acini at posterior one fifth; uterus coiled, posterior and anterior to ovary but posterior to cirrus pouch and the vitellaria granular, extend throughout the parenchyma.

5. The present tapeworm differs from *L. aurangabadensis minuta* which is having head roughly rounded, absence of longitudinal furrows, testes 325 - 350, from posterior end to base of the head; cirrus pouch oval, situated at posterior one third; ovary clearly bilobed with small,
blunt acini; at posterior one fifth; uterus coiled, posterior and anterior to ovary but not anterior to cirrus pouch and vitellaria granular, through out the parenchyma.

6. The worm under discussion differs from L. paithanensis which is having head rounded, short, devoid of longitudinal furrows; testes about 400; from posterior end to anterior one; cirrus pouch oval, at posterior one half; ovary bilobed, roughly 'U' shaped, at posterior one eighth, uterus not seen and vitellaria granular, extend throughout the parenchyma.

7. The present form differs from L. narcinei n.sp. (described earlier) which is having head rounded, short, wide without longitudinal furrows; testes 120 - 130, few posterior, up to anterior tip of the worm; cirrus pouch oval, situated just anterior to middle; ovary bilobed, with acini, situated just posterior to the middle; uterus not seen; vitellaria follicular, in 3-4 rows on each side, occupy entire space in posterior 1/6 region of the worm.

Above noted distinct characters justify the recognition of present worm as a new species and
hence the name *L. sopani* n.sp. is proposed in
honour of Shri SopanRao Shinde, brother-in-law
of the author, due to whose constant encouragement,
this work is being carried out by him the author.

<table>
<thead>
<tr>
<th>Type species</th>
<th>Lytocestoides <em>sopani</em> n.sp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td><em>Trygon zugei</em>, Muller and Harnele, 1841.</td>
</tr>
<tr>
<td>Habitat</td>
<td>Intestine.</td>
</tr>
<tr>
<td>Locality</td>
<td>Waltair, (A.P.), India.</td>
</tr>
<tr>
<td>Date of collection</td>
<td>7th May, 1982.</td>
</tr>
</tbody>
</table>
Chart showing comparative characters of the species of *Lytocestoides* Baylis, 1928.

<table>
<thead>
<tr>
<th>Character</th>
<th><em>L. tanganyikae</em> Baylis, 1928</th>
<th><em>L. aurangabadensis</em> Shinde, 1970</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>Short, conical with longitudinal furrows.</td>
<td>Roughly triangular, absence of longitudinal furrows.</td>
</tr>
<tr>
<td>Testes</td>
<td>Numerous, extending all round peripheral medulla, between uterus and base of scolex.</td>
<td>About 300, from posterior end to base of head</td>
</tr>
<tr>
<td>Ovary</td>
<td>Indistinctly bilobed, medullary, at posterior 1/5th</td>
<td>Clearly bilobed small, blunt acini, at posterior 1/4.</td>
</tr>
<tr>
<td>Vitellaria</td>
<td>Extending throughout in cortical parenchyma, except for scolex and granular.</td>
<td>Extend all along the length and granular.</td>
</tr>
<tr>
<td>Uterus</td>
<td>Coiled, posterior and anterior to ovary, not anterior to cirrus pouch.</td>
<td>Coiled posterior and anterior to ovary not anterior to cirrus pouch.</td>
</tr>
<tr>
<td>Cirrus pouch</td>
<td>Not reported</td>
<td>Oval, situated at posterior 1/3.</td>
</tr>
<tr>
<td>Host</td>
<td><em>Alestes</em> sp.</td>
<td><em>Barbus</em> <em>collus</em></td>
</tr>
<tr>
<td>Locality</td>
<td>Tanganyika, Africa</td>
<td>Aurangabad, M.S., India</td>
</tr>
<tr>
<td>Tax</td>
<td>L. <em>aurangabadensis</em> minot, Shinde, 1970</td>
<td>L. <em>aurangabadensis</em> minute, Shinde, 1970</td>
</tr>
<tr>
<td>------------</td>
<td>-----------------------------------------</td>
<td>-----------------------------------------</td>
</tr>
<tr>
<td>Head</td>
<td>Conical or roughly triangular, absence of longitudinal furrows.</td>
<td>Roughly rounded, absence of longitudinal furrows.</td>
</tr>
<tr>
<td>Testes</td>
<td>200–210, from posterior end to anterior end of the worm, also in region of head.</td>
<td>325–350, from posterior end to base of head not in region of head.</td>
</tr>
<tr>
<td>Ovary</td>
<td>Clearly bilobed, with small, blunt acini, at posterior 1/5.</td>
<td>Clearly bilobed with small, blunt acini at posterior 1/5.</td>
</tr>
<tr>
<td>Vitellaria</td>
<td>Extend throughout parenchyma and granular</td>
<td>Extend throughout parenchyma and granular.</td>
</tr>
<tr>
<td>Uterus</td>
<td>Coiled, posterior and anterior to ovary, not anterior to cirrus pouch.</td>
<td>Coiled, posterior and anterior to ovary, not anterior to cirrus pouch.</td>
</tr>
<tr>
<td>Cirrus pouch</td>
<td>Oval, situated at posterior 1/3</td>
<td>Oval, situated at post 1/3</td>
</tr>
<tr>
<td>Host</td>
<td><em>Barbus colius</em></td>
<td><em>Labeo calbasu</em></td>
</tr>
<tr>
<td>Locality</td>
<td><em>Aurangabad, M.S., India.</em></td>
<td><em>Aurangabad, M.S., India.</em></td>
</tr>
<tr>
<td></td>
<td><em>L. paithanensis</em></td>
<td><em>L. narciinei</em> n.sp.</td>
</tr>
<tr>
<td>------------------</td>
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<td>---------------------</td>
</tr>
<tr>
<td><strong>Head</strong></td>
<td>Rounded, short,</td>
<td>Rounded, short, wide</td>
</tr>
<tr>
<td></td>
<td>devoid of</td>
<td>without longitudinal</td>
</tr>
<tr>
<td></td>
<td>longitudinal</td>
<td>furrows.</td>
</tr>
<tr>
<td></td>
<td>furrows.</td>
<td></td>
</tr>
<tr>
<td><strong>Testes</strong></td>
<td>About 400, from</td>
<td>120-130, preovarian</td>
</tr>
<tr>
<td></td>
<td>posterior end up to</td>
<td>and few posterior</td>
</tr>
<tr>
<td></td>
<td>anterior end of work</td>
<td>upto anterior tip</td>
</tr>
<tr>
<td></td>
<td></td>
<td>of the worm, large</td>
</tr>
<tr>
<td></td>
<td></td>
<td>rounded.</td>
</tr>
<tr>
<td><strong>Ovary</strong></td>
<td>Bilobed 'U' shaped</td>
<td>Bilobed, with 2 lobes,</td>
</tr>
<tr>
<td></td>
<td>at posterior 1/8</td>
<td>situated at posterior</td>
</tr>
<tr>
<td></td>
<td></td>
<td>to the middle.</td>
</tr>
<tr>
<td><strong>Vitellaria</strong></td>
<td>Extend throughout</td>
<td>Follicular, in 3-4</td>
</tr>
<tr>
<td></td>
<td>parenchyma,</td>
<td>rows on each side,</td>
</tr>
<tr>
<td></td>
<td>granular.</td>
<td>occupy entire</td>
</tr>
<tr>
<td></td>
<td></td>
<td>space in</td>
</tr>
<tr>
<td></td>
<td></td>
<td>posterior 1/6</td>
</tr>
<tr>
<td><strong>Uterus</strong></td>
<td>Not seen</td>
<td>-</td>
</tr>
<tr>
<td><strong>Cirrus pouch</strong></td>
<td>Oval, situated</td>
<td>Oval, situated just</td>
</tr>
<tr>
<td></td>
<td>just posterior</td>
<td>anterior to middle,</td>
</tr>
<tr>
<td></td>
<td>to middle.</td>
<td>marginal.</td>
</tr>
<tr>
<td><strong>Host</strong></td>
<td><em>Pseudocarpinus</em></td>
<td>-</td>
</tr>
<tr>
<td><strong>Locality</strong></td>
<td><em>Paithan, M.S.,</em></td>
<td><em>Vishakhapatnam, A.P.,</em></td>
</tr>
<tr>
<td></td>
<td><em>India</em></td>
<td><em>India.</em></td>
</tr>
<tr>
<td><strong>Head</strong></td>
<td>Round, short without longitudinal furrow.</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Testes</strong></td>
<td>100-110, preovarian, upto anterior tip.</td>
<td></td>
</tr>
<tr>
<td><strong>Ovary</strong></td>
<td>Bilobed with scini, situated almost at 1/3 of posterior</td>
<td></td>
</tr>
<tr>
<td><strong>Vitellaria</strong></td>
<td>Follicular in 2-3 rows, anteriorly and posteriorly 1/3 completely filled with vitelline follicles.</td>
<td></td>
</tr>
<tr>
<td><strong>Uterus</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Cirrus pouch</strong></td>
<td>Oval, situated at middle, marginal.</td>
<td></td>
</tr>
<tr>
<td><strong>Host</strong></td>
<td>-</td>
<td></td>
</tr>
<tr>
<td><strong>Locality</strong></td>
<td>Vishakhapatnam, A.P., India.</td>
<td></td>
</tr>
</tbody>
</table>
A key to the species of the genus

**Lytocestoides** Baylis, 1928.

Testes more than 350  ...  ...  1
Testes less than 300  ...  ...  2

1. Head short, conical with

furrows  ...  ...  ...  **L. tanganyika**

Head roughly triangular,

absence of furrows  ...  ...  ...  **L. aurangabadensis**

Head rounded devoid of

furrows  ...  ...  ...  **L. paithanensis**

2. Ovary just posterior to the

middle, vitellaria follicular

in 3–4 rows  ...  ...  ...  **L. narcinei** n.sp.

Ovary almost at 1/3 of posterior

vitellaria follicular, in 2 rows  ...  **L. sopani** n.sp.
Tetraphyllidea  Caruis, 1863.
Phyllobothridae  Braun, 1900.
Phyllobothrium  Beneden, 1849.

_P. minutum_ Shipley and Horne1, 1906

**DESCRIPTION**

Four specimens were collected from the intestine of the _Trygon sephum_ at Kakinada, (A.P.), East coast of India, in the month of April, 1982.

The scolex is almost circular, medium in size, irregular in shape, with frilled margin and measures 0.235 x 0.131 in length and breadth. The scolex is having four, sessile, petal like bothridia and each with an accessory sucker. The bothridia measure 0.055 - 150 x 0.065 - 0.077 in length and breadth. Four accessory suckers, round in shape and measure 0.024 in diameter. The scolex is followed by a long neck, which is thin, cylindrical and measures 0.398 x 0.128 - 0.069 in length and breadth.
The mature segments are longer than broad, almost two times longer than broad, tapering at both the ends, wider at middle and measure 0.571 x 0.020 - 0.025 in length and breadth. The testes are 30 - 32 in number, round in shape, large in size, preovarian, in a single field, in four rows, placed in medullary region, extend up to the anterior margin of the segment and measure 0.034 - 0.051 in diameter. The cirrus pouch is large, oval in shape, extends almost up to the middle of the segment, placed at one fifth from anterior margin of segment and measures 0.075 x 0.051 in length and breadth. The cirrus is a thin tube, straight and measures 0.095 x 0.003 in length and breadth respectively. The vas deferens is zig-zag, thick and measures 0.012 x 0.003 in length and breadth. The genital pores are marginal, unilateral, oval and measure 0.013 x 0.008 in length and breadth.

The ovary is bilobed, 'U' shaped, lobes compact, situated at the posterior margin of the segment, lobes unequal, directed anteriorly, extend transversely up to the sub corticcular region and measures 0.034 x 0.051 - 0.060 in length and breadth. The vagina is a thin tube, situated posterior to cirrus pouch, reaches up to the middle of the segment transversely, takes a curve, runs
Phyllobothrium minutum

Shipley and Hornell, 1906.

1. Scolex
2. Mature segment
3. Gravid segment
obliquely and posteriorly, opens in to the ootype and measures 0.519 X 0.005 in length and breadth. The ootype is small, round in shape, situated in between two ovarian lobes, dorsal to isthmus and measures 0.002 in diameter.

The vitellarium are granular, corticular, thin strips, in the lateral fields, from the anterior to the posterior margin of the segment.

The gravid segments are longer than broad, almost two and half times longer than broad and measure 0.582 X 0.291 in length and breadth. The uterus is a bent tube, broad anteriorly, narrow posteriorly and measures 0.533 X 0.072 - 0.145 in length and breadth.

**DISCUSSION**

The worm under discussion on closer observation proved to be *Phyllothorium minutum* Shipley and Hornell, 1906 as bothridium not divided into two bothridia without marginal loculi, myzorhynchus absent and genital pores unilateral, but it is having some additional characters, which are as follows:

1. It differs from *Phyllothorium minutum* in number of proglottids (50 - 60 as against 80 - 100).
2. It differs in the structure of neck (short and wide as against long, hair like and thin).

3. It differs in the size of accessory suckers (small, round as against large, oval).

4. It differs in the position of cirrus pouch (At 1/5 from anterior margin as against at 1/3 from anterior margin of segments).

As the characters are minor, it is redescribed here as *Phyllobothrium minutum* Shipley et Hornell, 1906 which is reported from *Carcharius melanopterus* in Ceylon, where as present worm is being reported from *Trygon sephen* from Kakinada (A.P.). It is a new host record.

<table>
<thead>
<tr>
<th>Type species</th>
<th><em>Phyllobothrium minutum</em></th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td><em>Trygon sephen</em> Cuvier, 1871</td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve.</td>
</tr>
<tr>
<td>Locality</td>
<td>Kakinada, (A.P.) India</td>
</tr>
</tbody>
</table>

Date of collection: 28th April, 1982

Tetraphylliidea Carus, 1863.

Phyllobothriidae Braun, 1849.

Dinobothrium Beneden, 1889.

*D. rhynchobati* n.sp.

**INTRODUCTION**

The genus *Dinobothrium* was erected by Beneden in 1889 as type species *D. septaria* from *Lamna cornubica*. Later on no species is added to this genus. The present communication deals with the description of a new species under the same genus as *D. rhynchobati* n.sp. collected from *Rhynchobatus djeddensis* at Madras, (T.N.) east coast of India.

**DESCRIPTION**

The worms were collected from the intestine of the *Rhynchobatus djeddensis* at Madras, (T.N.) east coast of India, in the month of May, 1982.

The scolex is almost oval, broad anteriorly, tapers posteriorly and measures $0.339 \times 0.145 - 0.241$ in length and breadth. Scolex is without hooks. Bothridia sessile, scoop-shaped or leaf like, with margin
entire and thickened anteriorly, in to a shelf like crest, the outer end of which is produced backward in to a bified lobe and bothridia measure $0.365 - 0.388 \times 0.048 - 0.121$ in length and breadth.

Neck slender, long and measures $0.241 \times 0.048$ in length and breadth.

Proglottides not imbricated, broader than long, in immature ones, but longer than broad in mature ones, almost two times longer than broad and measure $0.676 \times 0.436$ in length and breadth. The testes are 14 in number, medium in size, oval in shape, in two rows, preovarian, evenly distributed, extend up to the anterior margin of the segment and measure $0.058 - 0.072 \times 0.097 - 0.072$ in length and breadth. The cirrus pouch is medium in size, oval in shape, placed at just middle of the segment and measures $0.097 \times 0.072$ in length and breadth. The cirrus is oval, straight, thin and measures $0.097 \times 0.009$ in length and breadth. The vas deferens is short, thin and measures $0.106 \times 0.009$ in length and breadth. The genital pores are small, oval, irregularly alternate, placed at just middle of the segment and measures $0.029 \times 0.014$ in length and breadth.
Dinobothrium rhynchobati n.sp.

1. Scolex
2. Mature segment
3. Arrangement of the segment
4. Cirrus pouch
The ovary is bilobed, lobes large, oval, equal in length, near the posterior margin of the segment, without acini, connected by a small isthmus. The ovary measures 0.339 x 0.058 - 0.072 in length and breadth. The vagina is a thin tube, anteroventral to cirrus pouch, opens into a common genital pore, runs transversely for a very short distance, then takes a curve obliquely joins to the ootype and measures 0.038 x 0.014 in length and breadth. The ootype is small, round, posterior to the ovary and measures 0.019 in diameter.

The vitellaria are follicular, corticular, preovarian, in a single row on each side, along the lateral sides of the segment, round in shape and measure 0.009 - 0.019 in diameter.

DISCUSSION

The worm under discussion in having 4 bothridia, which are sessile, scoop-shaped or leaf-like, with thickened margins anteriorly, into a shelf-like crest, the anterior end produced into bifid lobes and testes in two groups comes closer to D. septaria Beneden 1889, but differs from it in many characters.
The present cestode in having the scolex oval, with four accessory suckers; bothridia leaf-like with thickened margins; mature segments two times longer than broad, testes 14, in two groups, pre-ovarian ovary bilobed, lobes compact near posterior margin of the segment. Vagina anteroventral to cirrus pouch and vitellaria follicular, in one row on each lateral side of mature segments, subcorticular; differs from *D. septaria*, which is having scolex cubodial, bothridia sessile, scoop-shaped or leaf like with thickened margin anteriorly and having four accessory suckers or pseudosuckers or both on crest or bothridia; mature segments 4 times broader than long, testes 45 - 50, in two groups, lateral to ovary; ovary 4 lobed, or V - shaped, at middle, or posterior to middle of the segment; vagina may be strongly developed and vitellaria granular, subcorticular.

Considering these characters it is necessary to erect a new species for these worms and hence the name *D. rhynchobati* n.sp. is proposed after the generic name of the host.

<table>
<thead>
<tr>
<th>Type species</th>
<th><em>Dinobothrium rhynchobati</em> n.sp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Host</td>
<td><em>Rhynchobatus djeedensis</em> Cantor, 1851</td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve.</td>
</tr>
<tr>
<td>Locality</td>
<td>Madras (T.N.), East coast of India.</td>
</tr>
<tr>
<td>Date of collection</td>
<td>5th May, 1982</td>
</tr>
</tbody>
</table>
Chart showing the comparative account of the species of the genus *Dinobothrium* Beneden, 1889.

<table>
<thead>
<tr>
<th></th>
<th><em>D. septaria</em></th>
<th><em>D. rynchobati</em> n.sp.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scolex</strong></td>
<td>Cuboidal</td>
<td>Oval, with 4 accessory suckers.</td>
</tr>
<tr>
<td><strong>Bothridia</strong></td>
<td>Sessile, scopp shaped or leaf like, thickened margins anterior.</td>
<td>Leaf like with thick end margins.</td>
</tr>
<tr>
<td><strong>Accessory suckers</strong></td>
<td>4 accessory suckers or pseudo suckers or borth on crest of bothridia.</td>
<td>On scolex.</td>
</tr>
<tr>
<td><strong>Mature segments</strong></td>
<td>Proglottids broader than long, longer than broad in granular ones, in one or more layers in testes in travascular field, numerous (45-50)</td>
<td>Two times longer than broad, 14 in 2 groups, in 2 rows, preovarian.</td>
</tr>
<tr>
<td><strong>Ovary</strong></td>
<td>Four lobed 'H' or V shaped at middle or posterior to middle</td>
<td>Bilobed, lobes compact, near post margin</td>
</tr>
<tr>
<td><strong>Vagina</strong></td>
<td>May be strongly developed</td>
<td>Anteroventral to cirrus pouch</td>
</tr>
<tr>
<td><strong>Vitellaria</strong></td>
<td>Granular, sub-corticular</td>
<td>Follicular, in row on each side, sub-corticular.</td>
</tr>
</tbody>
</table>
A Key to the species of the genus

Dinobothrium  Beneden, 1889.

Scolex cuboidal, testes 45-50, in number, ovary 'H' or 'V' shaped and vitellaria granular  ...  D. septaria

Scolex oval testes 14 in number, ovary bi-lobed and vitellaria follicular  ...  D. rhynchobati n.sp.

Trypanorhynchus Diesing, 1863.

Atheca Diesing, 1854.

Tentaculariidae Pache, 1926.

Nybelinia

N. pinteri Yamaguti, 1934.

DESCRIPTION

Five worms were collected from the intestine of the Trygon zugei at Waltair, A.P., in the month of May, 1982.

The scolex is elongated, almost rectangular, flat and measures 1.359 x 0.291 - 0.557 in length and breadth. Anterior half region of scolex is overlapped by four bothridia, which are oval, large, elongated, petal like and measure 0.582 - 0.631 x 0.048 - 0.097 in length and breadth.

The scolex is divided into three regions, pars bothridialis, pars vaginalis and pars bulbosa.
The pars bothridialis is large, dome shaped, overlapping almost anterior half region of the scolex and also overlaps the pars vaginalis, more than half of its length; four tentacles protrude out through pars bothridialis. The tentacles are short, wide, stout, armed with numerous circles of spines, the spines are 6 - 8 in each circle, triangular in shape, broader at the base and narrow at the tip, the tentacles measure 0.191 X 0.048 in length and breadth. The spines measure 0.017 X 0.020 X 0.003 - 0.008 in length and breadth.

The pars vaginalis starts immediately behind the tentacles, consists of four, long, thin tubes, reaching upto pars bulbosa. The pars vaginalis is devoid of spines and measures 0.676 X 0.024 in length and breadth. The pars bulbosa is the posterior most region, which is globular, consists of 4 bulbs which are of medium size, oval, elongated, banana shaped, and measure 0.291 - 0.339 X 0.072 - 0.057 in length and breadth.

Only scolices were recovered and no mature and gravid segments were developed. As the scolices show some interesting characters, it is considered proper to report the same in the thesis.
Nybelina pintneri, Yamaguti, 1934.

1  Scolex

2  Arrangement of hooks on tentacles
**DISCUSSION**

On closer examination these worms turned out to be *Nybelinia pintneri* Yamaguti, 1934. The present worms are having some additional characters which as follows:

1. In the worm under discussion scolex is elongated, almost rectangular as against oval and short.

2. It differs in having the bothridia large, elongated, petal like, as against small, short and bean shaped.

3. The pars bulbosa is entirely separate from pars bothridialis as against overlapping on each other.

4. The spiral rows of recurved hooks on probosias are 26 as against 33.

5. It differs in having 6 to 8 hooks, in a single circle of probosis as against 5 to 6.

As the characters are minor, it is redescribed here as *Nybelinia pintneri* Yamaguti, 1934.

Yamaguti (1934) recorded his species from the stomach of *Prionace glauca* Muller and Henle, Pacific coast of Japan.

The present worms are occurred in spiral intestine of *Trygon gugei* Muller and Henle. It is a new host record.
<table>
<thead>
<tr>
<th>Type species</th>
<th><em>Neybelinia pintneri</em></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yamaguti, 1934.</td>
</tr>
<tr>
<td>Host</td>
<td><em>Trygon zuei</em></td>
</tr>
<tr>
<td></td>
<td>Muller and Henle.</td>
</tr>
<tr>
<td>Habitat</td>
<td>Spiral valve.</td>
</tr>
<tr>
<td>Locality</td>
<td>Waltair, A.P., India.</td>
</tr>
<tr>
<td>Date of collection</td>
<td>7th May, 1982.</td>
</tr>
</tbody>
</table>
SUMMARY

PART I

Part first deals with the cestodes of orders Caryophyllidea, tetraphyllidea and trypanorhyncha.

From order Caryophyllidea two new species are described Lytocestoides narcinei n.sp. and Lytocestoides sopani n.sp. from Narcine brunnea Henle and Trygon zuei Muller and Henle, 1841.

From order tetraphyllidea (Family: Phyllobothridae) one new species and one redescribed i.e. Phyllobothrium minutum Shipley and Hornell, 1906 from Trygon sephen Cuvier, 1871 and Dinobothrium rhynchosabti n.sp. from Rhinobobatus djeddensis Cantor, 1851 is reported from order Trypanorhyncha (Family: Tentacularidae) one species is redescribed i.e. Nybalina piniteri Yamaguti, 1934, from Trygon zuei Muller and Henle, 1841.