

¹ NOTES ON PARASITES—42-46.

42-46

BY CH. WARDELL STILES AND ALBERT HASSALL.

42: Comparison of the type of *Distomum longissimum* von Linstow, 1883 with the type of *D. longissimum corvinum* Stiles & Hassall, 1894.

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In 1883 von Linstow described a new species of fluke, *Distomum longissimum*, from the biliary ducts of *Ardea stellaris*, in Turkestan, with the following diagnosis:

(p. 308). 87: *Distomum longissimum* n. sp.

Glass No. 13,171, microscopisches Präparat No. 202.

Körper sehr gestreckt, cylindrisch, 20 mm. lang, 1 mm. breit, unbewaffnet; Mundsaugnapf mit einem Durchmesser von 0.28 mm., Bauchsaugnapf grösser, im vordersten Sechstel des Körpers gelegen, 0.34 mm. gross; dicht vor ihm liegen die Geschlechtsöffnungen. Der Schlundkopf ist fast ebenso gross wie der Mundsaugnapf. Die Dotterstöcke liegen an den Rändern des 3. Viertels des Körpers, unmittelbar hinter ihnen findet sich die Schalendrüse; auf diese folgt der lappige Keimstock und hierauf die grosse Vesicula seminalis inferior; zu hinterst liegen die gelappten Hoden. Die Eier sind 0.026 mm. lang und 0.015 mm. breit. Auffallender Weise finden sie sich bei allen Exemplaren in grosser Menge auch in den Darmschenkeln, wohin sie wohl mit vom Mundsaugnapfe aufgenommener Galle gelangt sind. Die Galle derjenigen Lebern, die von *Distomum hepaticum* bewohnt sind, enthält auch stets grosse Mengen von Eiern.

Distomum dimorphum unterscheidet sich von dieser Art. u. A. dadurch, dass bei ihm der Bauchsaugnapf kleiner ist als der Mundsaugnapf. (p. 309).

Wohnthier: *Ardea stellaris*, in der Leber.

Hassall has found in American crows a liver-fluke which bears a remarkable resemblance to von Linstow's species, and which we have described and figured (1894—Note 21: p. 418, Plate IV., fig. 17) under the name *D. longissimum corvinum*. In our summary we stated that "the form mentioned in this paper under the provisional name of *D. (D.) longissimum* var. *corvinum* will probably be shown to be a new species, but the type should be compared with v. Linstow's type before it

¹ Notes on Parasites—40: Check List of Specific Combinations in the Cestode Genera: *Andrya*, *Anoplocephala*, *Arhynchotania*, *Bertia*, *Ctenotania*, *Davainea*, *Moniezia*, *Plagiotenia* and *Thysanosoma*, is an extremely technical paper, which is of interest only to specialists in helminthology. It will therefore be published in the *United States National Museum* instead of the *Veterinary Magazine*.

presented by the author.



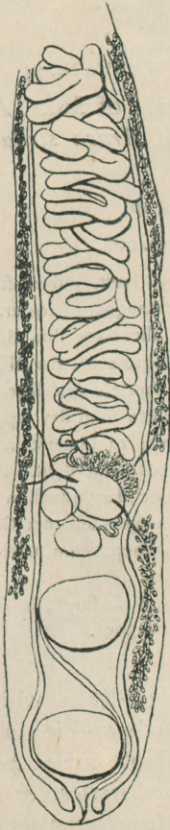


FIG. 1.

Posterior end of *Opisthorchis speciosus*, showing a variation of the vitellogene glands.

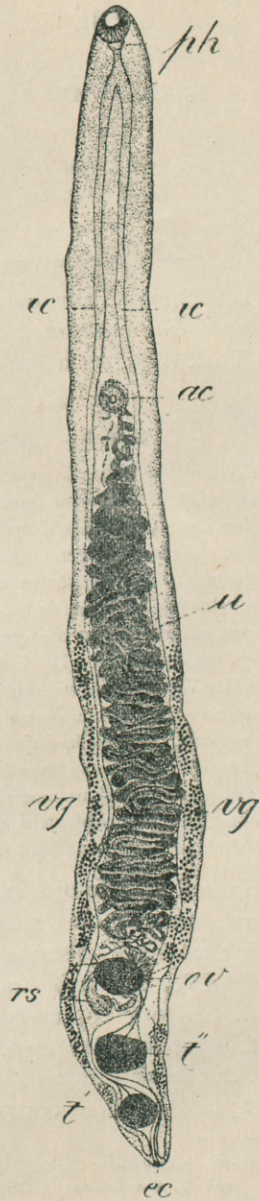


FIG. 2.

Original type-figure of *D. longissimum corvinum*. After Stiles & Hassall, 1894, Note 21, Fig. 17.

is given specific rank." As shown in the summary, the differences between the American and the Turkestan specimens are as follows:

Acetabulum about on boundary between first and second anterior sixths; testicles lobate; excretory canal (?); ovary lobate; vitellogene glands begin at about middle and extend to shell-gland and ovary; spines absent *D. longissimum*.



FIG. 3.
Original type
drawing of *O.*
longissimus.
After von Lin-
stow, 1883.

Acetabulum on boundary between first and second anterior thirds; testicles globular; end of excretory canal sigmoid, between testicles; ovary globular; vitellogene glands begin at middle and extend to posterior testicles or beyond; spines present . . . *D. longissimum corvinum*.

Diagnoses of the two worms were given on page 418 of the note cited.

Dr. von Linstow very kindly forwarded his original specimen and we have compared that minutely with our types. This comparison has brought up a number of questions regarding specific variation, host influence and influence of technique.

The difference in the position of the acetabulum is very marked, and notwithstanding the evident contraction in von Linstow's specimen, would settle the question of specific rank for the American form in the minds of most authors. While admitting the importance of this character, however, we will call attention to the fact that in *Fasciola magna* and other forms, we have noticed considerable variation in the



FIG. 4.
New figure of von Linstow's
type-specimen of *O. longis-*
simus.

distance of the acetabulum from the anterior extremity, and these differences were not always in proportion to the length of the body. There is considerable difference in the posterior boundary of the vitellaria, but in this character we find some variation in the American form. Fig. 1 shows a case of variation, somewhat similar to the variation between American and European specimens of *O. felineus*, recently pointed out by Ward (1895). The difference in the shape of the testicles can be explained, to some extent at least, by the different technique used with the two different specimens. The absence of spines in the original type and their presence in the type of *corvinum* may also perhaps be explained by the fact that von Linstow's specimen was evidently fixed and preserved in alcohol for some time, while our specimen was fixed first in corrosive sublimate. That von Linstow's mounted specimen was not so fresh as ours, and was furthermore unstained, must also be taken into consideration in comparing the two forms.

We reproduce the original figures of the two forms and also a new figure of von Linstow's type and a figure of an individual variation of the American form, in order to bring these points out more clearly. In our new figure of von Linstow's specimen we correct a slight error of the type drawing in regard to the position of the testicles. They do not extend beyond the intestinal caeca.

In connection with this comparison it would perhaps not be out of place to urge the introduction into specific descriptions of the technique used in fixing, preserving, staining and mounting the type specimens, for the various methods of fixing (alcohol, corrosive sublimate, etc.), of staining (carmine, haematoxylin, or no stain, etc.), and of mounting (balsam, glycerine, Farrant), will unquestionably account for many differences in descriptions of some species, and for assumed differences in supposed different species.

Upon first comparing the types of the Asiatic and the American forms, we were very much inclined to explain all the differences by variation and technique, and to retain the American form as a variety. Von Linstow (correspondence and conversation), who also compared the types, took an entirely different view of the case and maintained that the American form represented a distinct species, and a further study of the specimens has led us to agree with him and revert to our original view that the American form should be raised to specific rank.

As the propriety of retaining the varietal name *corvinum* as specific name is open to question on account of Stossich's (1886) *Distomum corvinae*, since it will be some time before Blanchard's generic name *Opisthorchis* will be generally adopted, we propose as specific name *Opisthorchis speciosus* (good-looking, handsome) for the form previously published as *D. longissimum corvinum*.

Both *D. longissimum* and *D. longissimum corvinum* belong to Blanchard's² new genus *Opisthorchis*, which we consider well founded.

SUMMARY.

A comparison of the type specimens of *Distomum longissimum* von Linstow and *D. longissimum corvinum* Stiles & Hassall, raises the latter to specific rank, notwithstanding our belief that some of the differences in the two forms can be explained by difference in the technique used. Both species belong to the genus *Opisthorchis*, and we propose the specific name *speciosus* for *D. longissimum corvinum*.

REFERENCES.

- BLANCHARD, R., 1895—Animaux parasites (Preliminary Notice); Bulletin de la Soc. zool. de France. I. xx. Nos. 8-9, p. 217.
 VON LINSTOW, 1883—Nematoden, Trematoden und Acanthocephalen, gesammelt von Prof. Fedtschenko in Turkestan; Arch. f. Naturg., Jhg. 49, Bd. I, p. 274-314. Taf. VI-IX.
 STILES & HASSALL, 1894—Notes on Parasites—21: A new species of fluke [*Distoma (Dicrocoelium) complexum*] found in cats in the United States, with bibliographies and diagnoses of allied forms; The VETERINARY MAGAZINE, Vol. I, No. 6, p. 413-432, Pl. I-IV.
 WARD, 1895—On *Distoma felineum* Riv. in the United States; The VETERINARY MAGAZINE, II, p. 152-158.

² Blanchard has recently proposed to unite in the genus *Opisthorchis* all the Distomes of the type of *Distomum felineum* Rivolta. The diagnosis of the genus reads as follows:

Opisthorchis R. Blanchard, 1895: Distomes of medium size. Oesophagus long or short, sometimes absent. Intestinal caeca not ramified. Genital pore in front of acetabulum. Cirrus-pouch wanting. Genital glands posterior to uterus; testicles globular or branched; vitellogene glands generally do not extend posterior of testicles. Type-species: *O. felinus* (Rivolta, 1884) R. Blanchard, 1895.

Blanchard also mentions the following species as belonging to this genus: *O. conjunctus* (Cobbold, 1860) Blanchard, 1895, *O. sinensis* (Cobbold, 1875) Blanchard, 1895, and *O. Buski* (Lankester, 1857) Blanchard, 1895.

To these species we now add the following forms:

O. conus (Creplin, 1825), *O. albidus* (Braun, 1893), *O. complexum* (Stiles & Hassall, 1894), *O. viverrini* (Poirier, 1886), *O. tenuicollis* (Rudolphi, 1819) and *O. longissimus* (von Linstow, 1883), all of which were described in the genus *Distomum*.

In the same paper Blanchard suppresses the generic term *Distomum* on account of the law of priority [International Rules], and accepts *Dicrocoelium* as generic name with *D. lanceolatum* as type-species [see p. 158].

We fully agree with Blanchard in this change of names.

43: *The synonymy of Opisthorchis conus* (Creplin, 1825).

The synonymy of the flukes of cats and dogs has been exceedingly uncertain until quite recently, when Max Braun (1893) succeeded in obtaining a number of type-specimens and in establishing the identity of certain forms. Braun reduced the specimens he examined to three species, for which he adopted the names *Distomum truncatum* (Rudolphi), *D. albidum* Braun, and *D. felineum* Rivolta. In accepting the name *truncatum*, Braun carried out the law of priority, so far as the literature he cited was concerned—although it is well known that he has upon more than one occasion spoken strongly against this necessary and just rule, now adopted by all prominent zoological societies. In our Note: 21 (1894) we adopted Braun's nomenclature, believing at the time that we were also following that law. We, as well as Braun had, however, overlooked one of Rudolphi's (1814) earlier papers, in which the specific combination, *D. truncatum* Rudolphi, was used for a parasite of fish—evidently another species of fluke. This leaves the generic name *Distomum* with the combinations *D. truncatum* (Abildgaard, 1806) Rudolphi, 1814 and *D. truncatum* (Rudolphi, 1819) which makes it necessary to discard the second combination.* We propose, therefore, to suppress *truncatum* (Rudolphi, 1819) nec (Abildgaard, 1806) Rudolphi, 1814, and to adopt for this species the next available name, *i.e.*, *conus* Creplin, 1825.

The synonymy based upon Braun (1893) and Stiles & Hassall (1894) of the worms which come into consideration in connection with this point is as follows:

Opisthorchis conus (Creplin, 1825) Stiles & Hassall, 1896.

1819, *Amphistoma truncatum* n. sp. Rudolphi;

1825, *Distomum conus* n. sp. Creplin [nec Gurlt, 1831];

†1859, *D. truncatum* Ercolani [nec (Abildgaard, 1806) Rudolphi, 1814; nec F. S. Leuckart, 1842];

* International Rules, Art 44; A. O. U. Code, Canon 33.

† Braun (1893, p. 384-385, foot note) mentions *D. truncatum* Ercolani, 1859, but seems to reserve judgment as to whether it is identical with *D. conus* Creplin; on p. 424, however, he gives a *D. truncatum* Ercolani, 1846, as synonym of *D. truncatum* (Rudolphi, 1819). We are unable to obtain Ercolani, 1859, and can find no title for Ercolani, 1846; in Perroncito (1882, p. 284, however, we find a species given as *D. troncatum* Ercolani (*D. truncatum* Ercolani) which agrees in size, etc., with *D. conus*; Perroncito states that three specimens of this form were collected by Ercolani in 1846. This probably explains the dates 1846 and 1859 as used by Braun.

- 1875, *D. campanulatum* n. sp. Ercolani (nomen nudum);
 1875, *D. campanulatum* n. sp. Ercolani;
 1882, "*D. truncatum* Ercolani" of Perroncito;
 1886, "*D. conis*, Creplin" of Perroncito (*D. conus* Creplin);
 1886, *D. truncatum* (Rudolphi, 1819) Railliet pars [nec (Abildgaard, 1806) Rudolphi, 1814].
 1886, *D. truncatum* (Rudolphi, 1819) Perroncito [nec (Abildgaard, 1806) Rudolphi, 1814].
Opisthorchis felineus (Rivolta, 1884) Blanchard, 1895.
 1831, *D. conus* Gurlt [nec Creplin, 1825];
 *1836, *D. lanceolatum* von Siebold [nec (Rudolphi, 1803) Mehlis, 1825];
 1839, *D. lanceolatum* Creplin (pars *D. conus* Gurlt);
 1885, *D. lanceolatum* Van Tright;
 1889, *D. conus* Sonsino (*D. conus* Gurlt nec Creplin).
 1886, *D. truncatum* (Rudolphi, 1819) of Railliet, pars [nec (Abildgaard, 1806) Rudolphi, 1814];
 1892, *D. sibiricum* Winogradoff.

Rudolphi's earlier (1814) species of *D. truncatum* comes from a fish, and according to Rudolphi, is perhaps identical with *D. tereticolle*. Whether this is the case or not, however, has no bearing upon the point now under discussion; there remains no way to straighten the synonymy of the flukes of cats and dogs but to make the change proposed. It is unfortunate to again disturb the name of this parasite after Braun had apparently established it on the basis of priority—unfortunate, but nevertheless, necessary and consistent.

Monticelli (1889, p. 321) has mentioned specimens of *Amphistomum truncatum* Rudolphi taken from seals (*Phoca vitulina*) and preserved in the British Museum. Through the kindness of Dr. Günther, who writes us that these specimens belong to the Siebold collection, we have been able to compare one of these parasites with Rudolphi's original material. The fluke is unquestionably specifically identical with Rudolphi's (1819) form; the ventral acetabulum is distinctly visible in its normal position and the topographical anatomy of the testicles, vitellaria and uterus agrees with the figures published by Braun and by us. Monticelli's reference is, therefore, to be added to the bibliography of *O. conus*.

*Strike out "('58.) *D. lanceolatum* Mehlis *Diesing*.—Revis. etc. (from Braun, '93 b)." in. Note 21, p. 421, Vet. Mag. This reference occurs both on p. 421 and 426; it should occur only on p. 426.

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- MONTICELLI, 1889—Notes on some Entozoa in the Collection of the British Museum; Proc. of the Zool. Soc. of London, June 4, pp. 321-325, pl. XXXIII.
 RUDOLPHI, 1814—Erster Nachtrag zu meiner Naturgeschichte der Eingeweidewürmer; Der Gesellschaft Naturforschender Freunde zu Berlin Magazin, etc., VI Jhg. (2 Quartal, 1812) 1814, p. 83-113.
 For other references, see Stiles & Hassall, 1894—Notes on Parasites—21.

44: *Dicrocoelium lanceatum* Stiles & Hassall, 1896.

Rudolphi (1803, p. 24) proposed the specific binomial *Fasciola lanceolata* for the parasite of cattle, sheep, man, etc., commonly known as the lancet-fluke (*Distomum lanceolatum*). During the years that the generic term *Distomum* superseded *Fasciola*, authors retained the binomial *D. lanceolatum*, attributing the species to Mehlis, 1825. At the time Rudolphi proposed the term *F. lanceolata* he overlooked or ignored the fact that Schrank (1790, p. 123, n. 22) had already used this name for a fluke found in fish, which Rudolphi described as *Distoma globiporum* (Rudolphi, 1802) Rudolphi, 1809 (Cf. Rudolphi, 1809, p. 364). Whether the synonymy given by Rudolphi is correct or not has nothing to do with the case, *F. lanceolata* Rudolphi, 1803 is pre-occupied and Rudolphi's term *lanceolata* must, therefore, according to the International Rules, be suppressed. We propose *lanceatum* as a substitute. The synonymy of this species would now read:—

Dicrocoelium lanceatum Stiles & Hassall, 1896.

1803, *Fasciola lanceolata* Rudolphi [nec Schrank, 1790].

1825, *Distoma lanceolatum* (Rudolphi [nec Schrank, 1790]) Mehlis.

1858, *Dicrocoelium lanceolatum* (Rudolphi, 1803 [nec Schrank, 1790]) Weinland.

REFERENCES.

- MEHLIS, 1825—Observationes anatomicae de Distomatæ hepatico et lanceolato. Götting, fol. 1. Tab. Col.
 RUDOLPHI, 1803—Neue Beobachtungen über die Eingeweidewürmer; Arch. f. Zoologie und Zootomie. Bd. III, St. 2. p. 1-32.
 RUDOLPHI, 1809—Entozoorum sive vermium intestinalium Historia naturalis. Vol. II, pars. 1. Amstelaedami.
 SCHRANK, 1790—Fortekning, Pa nagra hittils obeskrifne Intestinal-Krak; Kongl. Vetenskaps Academiens Nya Handlingar, Tom XI, p. 118-126. Stockholm.

45 : *Diectophyme* or *Eustrongylus* ?

In a recent publication (1894) we rejected the generic name *Eustrongylus* Diesing, 1851, in favor of the older generic name *Diectophyme* Collet-Meygret, 1802. At that time we gave no reasons for the change of name, and objection has since arisen in some quarters to adopting the change we proposed. In a recent article by our friend, R. Blanchard (1895), the French authority disagrees with us in this matter, upon the ground that "Collet-Meygret did not use the binomial nomenclature."

Notwithstanding the high authority which Blanchard's opinion carries with it in questions of nomenclature, we are unable to agree with him in his interpretation of the point at issue. The following passages taken from Collet-Meygret show that he applied the principles of binomial nomenclature, although he failed to name the species he was dealing with. It is important to notice in this connection that he was proposing a *new genus not a new species*.

p. 462, "Maintenant, à quel genre des vers intestins rapporter l'individu que je viens de décrire? Je ne le vois nullement; car s'il se rapproche, par quelques caractères, de celui des ascarides, il en diffère essentiellement par une foule d'autres. . . . Ces caractères peuvent-ils servir à établir un genre nouveau? Je suis très porté à le croire; . . . Ils (Bosc et Alibert) ont en conséquence jugé, comme moi, que cet individu devoit former un genre nouveau, très-voisin de celui des ascarides. J'établis donc ce nouveau genre, auquel je vais essayer de donner une dénomination, et d'assigner des caractères. . . . Voici quels sont les caractères du genre diectophyme. . . . Je m'abstiens de placer ici plusieurs caractères . . . pour deux raisons:"

p. 464. . . . "parceque les autres, pouvant être régardés comme secondaire, doivent en quelque sorte être réservés pour les espèces ou les variétés, lorsque des observations ultérieures permettront de les établir."

In this quotation we see clearly a recognition of the binomial principles. The author gave the name, however, only to the genus, and left the proposal of specific and varietal names to later authors, and thus fulfilled the conditions of Art. 44 of the International Rules.

We find no warrant in the International Rules or in international custom for rejecting a generic name because an author has failed to combine a specific name with the generic name.

While maintaining the validity of the generic name *Diectophyme*, however, we willingly adopt Blanchard's introduction of the specific name *visceralis* Gmelin, 1790, in preference to *gigas* Rudolphi, 1802, making the combination *D. visceralis*

(Gmelin, 1790) S. & H., 1896. It will be noticed that Gmelin gives no description of the worm, but his reference to Redi's figure would hold the name. *Ascaris canis et martis* Schrank, 1788, is given by some authors as synonym of *Dioclophyme visceralis*, but we are unable to verify the synonymy, as Schrank is not accessible to us.

REFERENCES.

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- COLLET-MEYGRET, 1802.—Mémoire sur un ver trouvé dans le rein d'un chéin; Journ. de Physique, de Chimie, d'Histoire naturelle et des Arts. Tom. 55. Paris, p. 458-464.
- DIESING, 1851.—Systema Helminthum. Vindobonnæ, Vol. II.
- STILES & HASSALL, 1894.—A Preliminary Catalogue of Parasites Contained in the Collections of the United States Bureau of Animal Industry, United States Army Medical Museum, Biological Department of the University of Pennsylvania (Coll. Leidy) and the Coll. Stiles and Coll. Hassall; The VETERINARY MAGAZINE, Vol. I, pp. 245-253, 331-354.

46. *An Examination of the Type of Moniezia Vogti (Moniez, 1879), Stiles & Hassall, 1896.*

In 1893 (p. 83) Stiles reported that the type-specimen of *Tænia Vogti* from sheep had been lost. Moniez has, however, recently found his original material, and has kindly placed it at our disposal for examination. For a full history of the form, see Stiles, in Stiles & Hassall, 1893, p. 83-85.

The type material has evidently been entirely dried up at some time, and accordingly but few statements can now be made on it. Several points, however, could be established with certainty.

In the first place, the pores are double in each segment instead of single, as authors have generally assumed; they are situated in the middle or slightly anterior to the middle of the segment.

Nothing can be seen of the genital glands, as the fragment consists entirely of gravid segments; the cirrus-pouch is visible but somewhat indistinct, and exact measurements cannot be made. The pouch measures approximately 0.18 mm. long; the receptaculum seminis is long and narrow; the eggs measure *circa* 60 μ in diameter, the pyriform body 20 μ in diameter; the horns of the pyriform body appear to end in a knob, such as

seen in several species of *Moniezia*. No interproglottidal glands could be distinguished.

Further details are not warranted because of the poor condition of the type; however, we think there is scarcely any doubt that specimen No. 607 (see Stiles & Hassall, 1893, p. 84-85, Pl. xvi, Figs. 1-1a, 2-2b) is specifically identical with Moniez's *Tænia Vogti*, and that this form is a *Moniezia* of the *alba* group. Whether *Moniezia Vogti*, however, is a good species, or whether it is a case of extreme variation of one of the better known species, must be left for future investigations to decide.

Provisional diagnosis.—*Moniezia Vogti* (Moniez, 1879), Stiles & Hassall, 1896. [Syn.—1879, *Tænia Vogti* Moniez; 1891, *Anoplocephala Vogti* (Moniez, 1879) Moniez.] Species dubia: strobila nearly half a meter long by 2.5 mm. broad; gravid segments may be 2.5 mm. broad by 5 mm. long; genital pores in middle or anterior of middle of lateral margin; cirrus-pouch *circa* 0.18 mm. long; ova 60 μ , pyriform body 20 μ , horns end in a knob.

Host.—Sheep (*Ovis aries*): Lille, France, by Moniez; England, by Hassall.

Type.—Very poorly preserved. Two slides with Moniez, two slides in United States National Museum, No. 1474. Hassall's specimen: in Coll. Hassall, one slide in United States National Museum, No. 607.

STILES & HASSALL, 1893.—A Revision of the Adult Cestodes of Cattle, Sheep and Allied Animals. Bulletin No. 4, United States Department Agriculture, Bureau of Animal Industry, Washington. (Contains bibliography.)

