DESCRIPTIONS OF TWO NEW SPECIES AND OTHER OBSERVATIONS ON THE GENUS *CEPHALENCHUS* GOODEY, 1962
(NEMATA: TYLENCHIDAE)

BY

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*Cephalenchus chilensis* sp. n. is described, distinguished by its large size (L of female = 0.70-0.82 mm), cephalic region not at all set off, stylet = 15-20 µm and tail length = 144-214 µm. *Cephalenchus brevicaudatus* sp. n. is described, distinguished by its short tail (54-93 µm), position of excretory pore at or anterior to hemizonid, and stylet = 19-25 µm. Three populations of *C. leptus* Siddiqi, 1963 were studied leading to synonymization of *C. limichus* Nesterov, 1973 with *C. leptus*. *Imphalenchus indicus* Dhanachand & Jairajpuri, 1980 is transferred to *Cephalenchus* and the genus *Imphalenchus* proposed as a synonym of *Cephalenchus*. *Imphalenchus macrorodorus* (Chawla et al., 1969) is removed from *Imphalenchus* and considered a species incertae sedis in the Tylenchinae. *C. rotundus* Siddiqui & Khan, 1983 is synonymized with *C. emarginatus* (Cobb, 1893) and *C. megacephalus* Goodey, 1962 and *C. planus* Siddiqui & Khan, 1983 with *C. hexalineatus* (Geraert, 1962). The generic diagnosis of *Cephalenchus* is emended, and a key to the species is presented.

**Keywords:** taxonomy, soil nematodes, identification key, morphology, descriptions.

*Cephalenchus* was first proposed as a subgenus of *Tylenchus* by Goodey (1962). He described *Tylenchus* (*Cephalenchus*) *megacephalus* sbg. n., sp. n., as a monotypic subgenus.

That species was subsequently proposed as a synonym of *Tylenchus hexalineatus* Geraert, 1962 by Geraert & Goodey (1964). *T. (C) hexalineatus* was in turn declared a synonym of *Tylenchus emarginatus* Cobb, 1893 by Colbran (1964). Golden (1971) proposed the rank of genus for *Cephalenchus* naming *C. hexalineatus* (Geraert, 1962) as type species without commenting on its prior synonymy with *C. emarginatus*. Egunjobi (1967) described a population from New Zealand under the name *Tylenchus (Aglenchus)* *whitus* which was transferred to *Aglenchus* *whitus* by Golden (1971). Further study by Bello & Geraert (1972) led to the conclusion that *A. whitus* was a synonym of *C. emarginatus*. Since then eleven nominal species have been added to this genus by description or by transfer.

One major change was proposed by Dhanachand & Jairajpuri (1980) when they transferred *Tyldorinae* to *Tylenchidae*. They considered *Cephalenchus* part of *Tyldorinae* along with *Tyldorus* Meagher, 1963 and proposed a new genus, *Imphalenchus* with two species, as the third genus of *Tyldorinae*. Andrássy (1984) published a comprehensive review of *Cephalenchus* and disagreed with the removal of *Cephalenchus* from *Tylenchinae*. He also
presented evidence for resurrecting both *C. hexalineatus* and *C. megacephalus* as distinct species separate from *C. emarginatus*. As a consequence Andrássy proposed to reestablish *C. megacephalus* as type species of the genus.

SEM photographs have been published for two species of *Cephalenchus*. Sher & Bell (1975) had a single picture of a female identified as *Cephalenchus* sp. from Australia. This led to a search for other specimens of that population. Several were found and loaned for this study from the University of California Nematode collection at Riverside. It is thought to be a new species and is so described below. The other photograph by Brzeski & Sauer (1982) was identified as *Cephalenchus emarginatus*.

A collection of *Cephalenchus* from Orange Bay, Hoste Island, Chile held males and females of a species that appears related to *C. emarginatus* sensu lato but different in several essential respects. It is described below as a new species.

Three populations that appear to be related to *C. leptus* and *C. limichus* also have been available for this study. Two are from Colorado, one of which (Guanella Pass) is the same site from which Andrássy reported *C. limichus*. The other collection is from Shawnee, Colorado about ten miles from Guanella Pass and at a lower elevation. The third collection is from Loomis, California. SEM photographs were obtained from the Orange Bay, Shawnee, Guanella Pass and Loomis specimens, which have added valuable information to our knowledge of this genus.

**MATERIALS AND METHODS**

The collection from Australia was provided as fixed specimens mounted in glycerin. All the others were killed in hot water then preserved in formalin (2½% for the Colorado specimens, 4% for the Orange Bay specimens, because of the higher organic content of the sieveings) for varying periods of time. The specimens were transferred from storage vials to F.A.A., dehydrated to glycerin and mounted in glycerin.

Specimens for scanning electron microscopy were transferred from F.A.A. into a graded series of alcohol beginning at 30%, terminating in absolute alcohol. Specimens then were taken through a graded series of amyl acetate in absolute alcohol, beginning with 30% ending with absolute amyl acetate. Other specimens from permanent glycerin slides were first placed in a mixture of glycerin-alcohol-water, 80:6:4:. Through a series of gradual changes the glycerin was removed and the specimens were in 30% alcohol, then transferred to F.A.A. then to 2½% formalin for a minimum of 24 h. From this point they were processed into a graded series of alcohol and then amyl acetate as described above for specimens not previously in glycerin. A 15 sec sonicatation was applied to specimens in absolute amyl acetate. After critical point drying with CO₂, the specimens were mounted on stubs and coated with 200 Å of gold sputtered on in several layers. Examination and photography was done on an