a limited period by us in a current study of the possible rôle of pituitary deficiency in reproductive disorders in birds. Even this smaller dosage not infrequently effected the prompt delivery of an egg. When injected at or near the hour of release of an egg from the ovary this same smaller dosage also sometimes prevents normal ovulation in the pigeon.

Experience has shown that an egg which has very recently entered the oviduct from the ovary can not be secured by this method. Injections rightly timed for this purpose result in the equivalent of an anti-peristalsis of the oviduct (ovum into body cavity); in the pigeon, however, it is easy to obtain prematurely eggs of somewhat more than 30 of the total 40 hours of oviducal development. As carried out by us the wildness of the bird is a factor in the interval of time from injection to laying. This results doubtless from the fact that, when kept close at hand for exact time records, the voluntary part of the act of expulsion is delayed or inhibited in the untamed birds.

It is evident that by this means eggs of various stages of immaturity—including successive eggs from the same parent—are made easily available for studies on the earlier stages of embryonic development; for experimental studies on these most modifiable stages; for chemical studies on various parts of the egg with less than the usual opportunities for change and admixture; and for isolating the functions of the various parts of the bird's oviduct. It is probable also that under certain conditions or limitations this reaction of the dove's oviduct—active and *in situ*—would be useful as a means of standardizing solutions of the active principle of the pituitary gland. Incidentally, it may be added that it has already been found practicable in this laboratory to utilize such prematurely laid eggs to make a crucial test of Stockard's[1] important suggestions on the cause of twinning and double-monster formation as these occur in birds.

[1] Stockard, C. R., *Amer. Jour. Anat.*, 1921, XXVIII., 115.

TABLE I

Data for One Series of Pituitrin Injections

Kind of Bird	No.	Dosage (in Thousandths of 1 c.c.)	Interval, Injection to Laying (Minutes)	No. of Hours Prematurely Laid
Ring-dove	1	22	25	4
	2	20	13	16
	3	22	8	16
	4	22	8	10
	5	22	14	10
	6	22	12	26
	7	22[1]	13	21
	8	22	Into b.c.	(37)
	9	28[2]	8	5
	10	20	6½	5
	11	10	Not laid	(34)
Common pigeon	12	44	13	18
	13	44	19	5
	14	44[1]	Some hrs.	+5
	15	44	22	5
Common fowl	16	264	(45)	?4
	17	2201	(33)	?4

[2] Injection repeated one or more times.

OSCAR RIDDLE

THE DISCOVERY OF OLENELLUS FAUNA IN SOUTHEASTERN BRITISH COLUMBIA[1]

IN the spring of this year, Col. C. H. Pollen, of Cranbrook, British Columbia, forwarded to the University at Vancouver, specimens of chocolate-brown shales showing imprints of lower Cambrian trilobites.

In May, the writer visited the locality for the Geological Survey of Canada, made further collections and studied the stratigraphy over a wide area.

The fossils collected were submitted to Dr. Charles D. Walcott, secretary of the Smithsonian Institution, who identified the following genera and species:

Callavia, cf. *nevadensis* Walcott,
Wanneria n. sp. ?,
Mesonacis gilberti Meek,
Wanneria, cf. *walcottanus* (Wanner),
Olenellus, cf. *fremonti* Walcott,
Prototypus senectus Billings,

Dr. Walcott states concerning the collection:

[1] Published with the permission of the Director, Geological Survey, Ottawa, Canada.

This fauna belongs to the upper portion of the Lower Cambrian, and it is essentially the same as that found above the tunnel at Mt. Stephen, B. C., and also found more or less all along the Cordilleran system down into southern Nevada.

The stratigraphy of the section is as follows:

Lower Cambrian	Chocolate-brown shales —*olenellus fauna*...	50 + feet
	fine-grained quartz conglomerate	300 + feet
	coarse conglomerate...	6 feet
	disconformity	
Precambrian Beltian	purple and green mud cracked siliceous metargillites (Siyeh)..	300 ± feet
	Purcell lava—amygdaloidal basalt.....	100 feet
	purple and green mud cracked siliceous metargillite and siliceous limestones..... (Siyeh formation)	1,000 + feet

In the Cranbrook area the characteristics of the disconformity between the Cambrian and Precambrian are:

1. The thickness of the sediments between the Purcell lava and the basal conglomerate of the Lower Cambrian varies from a few feet to three hundred feet, showing evidence of an unconformity.

2. The upper surface of the Precambrian does not show any evidence of weathering before the deposition of the Lower Cambrian.

3. The Precambrian and Cambrian strata correspond in dip and strike. At no place were discordant relationships observed.

4. The metargillites of the Precambrian are more highly metamorphosed than those of the Cambrian.

5. The contrast in lithology between the Precambrian and Cambrian formations is very marked. Mud cracked and ripple marked purple and green metargillites are characteristic of the Precambrian while the Lower Cambrian rocks are white quartzose conglomerates succeeded by grey and chocolate-brown shales.

6. The basal conglomerates of the Cambrian contain rounded fragments of the underlying siliceous argillites.

A full detailed statement concerning the stratigraphical relationships of the Precambrian and the Cambrian over a wide area is now in course of preparation to be published by the Geological Survey of Canada.

STUART J. SCHOFIELD
UNIVERSITY OF BRITISH COLUMBIA,
VANCOUVER

HOWARDULA BENIGNA; A NEMA PARASITE OF THE CUCUMBER-BEETLE

Howardula[1] Cobb. Characters of *Aphelenchus* Bastian, 1865, but without œsophageal bulb and with a non-bulbous onchium and much reflexed ovary. "Female" finally a flaccid, cylindroid sack, without distinct alimentary canal, and otherwise much deteriorated. Syngonic; male unknown. *Howardula* may be related to *Bradynema* zur Strassen, 1892, but the latter has no onchium and even lacks a mouth opening.

1.1	(?)5.	..... (?)	95'98.	(?)99.	3.5–5. mm
2.5	4.0	4.7	4.1	1.9	

Howardula benigna Cobb. Anus none or vestigial; vulva sometimes terminal; uterus nearly filling the body-cavity, posteriorly packed with larvæ and anteriorly with segmenting eggs, near the head in the vicinity of the small spermathecum narrowed and reflexed to the middle of the body, whence the narrow ovary turns forward and ends blind near the lead; onchium usually very obscure but the minute mouth opening still persisting. Inert, viviparous, usually all of the same stage of development in any individual host-insect, each when mature containing about two thousand embryos and segmenting eggs; the larvæ, apparently always all of one kind, sometimes ten to twenty thousand of them, proceeding from the mother nemas into the body-cavity, and into the sexual ap-

[1] Named for my distinguished friend Dr. L. O. Howard, chief of the U. S. Bureau of Entomology, president and past permanent secretary of the American Association for the Advancement of Science.