distasteful, and are often not really good mimics of wasps. They may merely be black-and-yellow-banded individuals helping to swell the numbers of specimens with this coloration. A predator eats a certain number and others escape, and if the latter are of many different species each species will benefit. New terminology is required, and on consultation Prof. L. W. Grensted has suggested the following: an 'ochlotic' species is one adapted for living in a crowd: it is an example of 'ochlosis', and is 'ochlo-chromatic' in coloration (οχλος = a crowd).

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I think there can be no advantage to *Corematodus shirana* in resembling *Tilapia*, other than the ability to approach its victims without being recognized.

The species of *Tilapia* and *Haplochromis* are all edible and are preyed upon by fishes, birds and man, and presumably by crocodiles. Far from protecting itself by joining shoals of *Tilapia, Corematodus* would thereby expose itself to the particular attentions of man, and to any predator to which a shoal is more obvious than a solitary fish. *Tilapia squamipinnis* and its allies are plankton feeders, without any defensive equipment except the spinous fin-rays, which are also present in *Corematodus*.

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Abnormal Reproduction in Woodlice

Under this heading I recorded in 1943[1] an instance where, without incubating in the brood pouch, a female specimen of *Armadillidium nasatum*, Budde-Lund produced a bunch of forty to forty-five eggs which duly hatched and produced normal young. Later, another female of the same species produced twenty eggs in a like manner, all of which duly hatched.

Later[2], I observed the same phenomenon to occur in *Armadillidium vulgare* (Latr.) when thirty-six eggs were deposited, but in this instance none hatched.

I have now a further case to record. On June 25, 1947, I received from Dr. Hamilton E. Quick a small collection of woodlice containing six specimens of *Armadillidium vulgare*, var. *nigra*, Cllge. There were two males and four females. I isolated the females, placing them in a Petri dish. On June 26 I noticed in the dish thirty-six rather small eggs scattered among the moss and leaves, and on July 3 most of these hatched out and died on the following day.

There were no signs of oostegites in the females in any of these cases.

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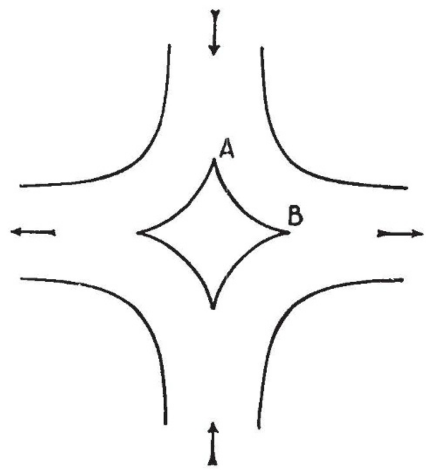
[1] *N. West Nat.*, **147**, 148 (1943).
[2] *N. West Nat.*, **7**, 8 (1945).

Analytical Solution of a Four-cusped Wake

In his letter in *Nature* of May 10, Dr. R. V. Southwell discusses the question of finite wakes in the two-dimensional motion of an inviscid fluid. Solutions exhibiting a wake of cuspidal form had been obtained by Miss Vaisey using relaxation methods; and Sir Geoffrey Taylor had remarked that these methods (since they employ a finite mesh) could not rigorously establish the existence of such forms, in that they can never dispose of the possibility that a 'splash' occurs at what has been assumed to be a cuspidal junction. The size of the mesh used in the relaxation process can be made very small, but it must always remain finite, and within that finite interval some disturbance may remain undetected. Dr. Southwell expressed his hope of finding some *exact* analytical solution exemplifying a closed wake with a cuspidal junction.

His letter encouraged me to look for such a solution, and the purpose of this communication is to report the discovery of an example which, by virtue of its symmetry, contains a four-cusped wake.



The example, of which details will be given elsewhere, is simply that of two equal and opposite streams approaching one another; each bifurcates symmetrically on meeting, and they depart at right angles to their original direction after pairing off their two halves. At the junction is included a four-cusped wake which may be of any size, or, in the limit, may reduce to a stagnation point. Writing

$$\zeta \equiv (1/q) \exp i\theta \quad \text{and} \quad w \equiv \varphi + i\psi,$$

where q is the velocity of flow at a point and θ the inclination of its direction, φ is the velocity-potential and ψ the stream-function, it can be shown that the relations determining the flow pattern are

$$w = (d/\pi) \log \{ (1 + t)/(1 - t) \}$$
$$t = sn \{ (4Ki/\pi) \log \zeta - K \}.$$

The intrinsic equation to the part of the wake boundary AB, in the positive quadrant, has been found to be

$$\frac{ds}{d\theta} = -\frac{8dkK}{\pi^2 a} \operatorname{sn}(4K\theta/\pi),$$

where

$$\frac{4K}{\pi} \log \frac{1}{a} = K'.$$

$2d$ is the asymptotic width of each stream, $4K$ is the real and $2iK'$ the imaginary period of Jacobi's elliptic function $\operatorname{sn}(u,k)$.

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June 4.