

maximum incubation time generally seems to be greater in those species breeding in cold or wet environments. The wide range in incubation time for the Emperor probably reflects the adaptive capacity of the embryo to survive sub-optimum conditions which would prove lethal to some species but merely retards the rate of development in others).

- (b) The Emperor chick emerges covered with down but the Kiwi embryo grows feathers and these are retained throughout its first year.
- (c) To survive, Emperor chicks must be fed within two or three days of hatching but Kiwi chicks remain in their burrow and do not feed until about six days old. It is thought that some may fast during the first 10 or 12 days after hatching (Robson 1958) without apparent ill effect. A Kiwi chick killed outside its burrow (and, therefore, thought to be at least six days old) weighed 281g. and this weight included 54g. of enclosed yolk.

LITERATURE

- PREVOST, J., 1961: *Ecologie du Manchot Empereur*. Exped. Polaires Francaises, Publ. 222.
 REID, B., 1965: *The Adelie Penguin Egg*. N.Z.J. Sci. 8.
 ROBSON, F. D., 1958: 'Kiwis in Captivity.' Bull. Hawke's Bay Art Gallery and Museum, Napier.
 ROMANOFF and ROMANOFF, 1949: 'The Avian Egg.' John Wiley, New York.



SHORT NOTE

A WRYBILL IN CENTRAL OTAGO

In October, 1965, while assisting members of the Wildlife Service in their census of birds of the upper Waitaki River catchment, it came as a surprise to me to find a few Wrybill *Anarhynchus frontalis* as far south as the Ahuriri riverbed near Omarama. I noted that their breeding habitat requires extensive areas of uncluttered shingle, and so it occurred to me at the time that perhaps a few stragglers could also be found on the larger shingly riverbeds of Central Otago. For the past four years I have been conducting a census of those areas in late spring, without however recording any Wrybills. Perhaps the most likely riverbed (being closest in direct line to the Ahuriri) was the Hunter, above Lake Hawea, but about eight miles of the broadest shingle stretches were flooded by the raising of the lake level in 1959 by some 60 feet for hydro-electric storage. My survey of this riverbed above the new lake level, conducted on 11 and 12/9/69, revealed no Wrybills. Perhaps I was too early.

On 2/9/69, while searching for a Spur-winged Plover's nest near the mouth of the Matukituki River, west Lake Wanaka, I spotted a single Wrybill about $\frac{3}{4}$ mile above the mouth. It was busily feeding among brownish algal-covered stones beside the river, and among a scattered flock of 23 Black-billed Gulls and 4 Banded Dotterels. The Wrybill was in breeding plumage and was occasionally harassed by one of the gulls so that it tended to keep very much to itself. Not wishing to disturb it I did not approach closer than about 20 yards so did not establish its sex, although from the sharp delineation and blackness of the pectoral band I should say it was a male.

— PETER CHILD