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P. VELLA

DEPARTMENT OF GEOLOGY,
VICTORIA UNIVERSITY OF WELLINGTON,
WELLINGTON,
NEW ZEALAND.

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IS THE ZAGROS FAULT LINE OF IRAN A WRENCH FAULT?

SIR,—In the recently published Geophysical Monograph 13 of the American Geophysical Union, The Earth's Crust and Upper Mantle, a short communication by Professor H. W. Wellman has included the Zagros fault line of Iran amongst the "Major Wrench Faults of the World (mostly active)". No evidence is given but reference is made to earlier papers by N. Pavoni (1961), and himself (1965). Pavoni suggested by dashed lines on a small scale map that the Zagros fault line might be a continuation of the Anatolian fault line; the latest tectonic map of the world, based on all available geological maps, disagrees. Wellman's conception comes from a study of small-scale air photo mosaics and his evidence is topographical not geological. In his own words evidence for horizontal movement along this 1200 km fault line was found in three places only. "The best locality shows tailing streams and three small streams that appear to have been displaced about 100 m. At the other localities there are a possibly displaced spur and streams. All displaced features favour dextral displacement, but none is conclusive". More than this is required to establish a world major wrench fault.

The Zagros fault line has been recorded geologically on the reconnaissance scale of 1:250,000. It has been visited by two generations of structurally and stratigraphically minded geologists, some of whom have in recent years viewed it from aircraft including helicopters. Not one of them has suggested that there has been any transcurrent movement, but all have been impressed by the evidence of overthrusting towards the south-west (or under thrusting in the opposite direction) which took place during the latest paroxysm of the Alpine orogeny in the Pliocene. It is possible that horizontal or vertical movement along this very important line took place during earlier phases of the orogeny but this is not subject to proof from air photographs.

The Middle East is attracting much regional tectonic interest at the present time, not least among geophysicists. It would be wrong to accept a late Tertiary major wrench fault along the very important Zagros fault line without any geological evidence of horizontal movement.

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J. V. HARRISON,
59 LITTLE LONDON,
KENNINGTON,
OXFORD.

N. L. FALCON,
THE DOWNS,
CHIDDINGFOLD,
SURREY.

3rd December, 1969