average density of the drop of suspension. If the particle density is known, the particle concentration of the suspension is then easily computed, either by weight or volume. The calibration procedure makes it unnecessary to know the precise volume of the drops—so long as they are identical—and if drops of standard density are interspersed with 'unknowns' during a series of analyses, temperature and shape corrections to Stokes's law are avoided. The determination requires less than a minute per drop. Density measurements performed in this manner are usually accurate to the fourth decimal place—based usually on the observed mean of three drops. The error introduced by small differences in the volume of the drop is small; using a drop size of about 40 mm³, the necessary accuracy is ± 1 mm³ in order to obtain reliable results.

As the determination is simple and rapid, the falling-drop method can easily be applied to the complete grain-size analysis by sedimentation velocity procedures, and the method can be used to determine the density versus depth and time function in a sedimenting column with convenience and precision.

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GEOLOGY

Permanency of Continents and Ocean Basin Lineations

CARR¹ recently proposed that the close correspondence between lineations on continents and the ocean floor and a theoretical shear net calculated by Vening Meinesz² militates against the hypothesis that the continents have drifted since Pre-Cambrian time. The long linear sea floor fracture zones, all discovered since Vening Meinesz drew his net, are admirably suited for testing such a correspondence. Some appear on the charts used in Carr's investigation, but many newly discovered ones do not. The whole pattern of fracture zones does not show a significant correlation with the shear net.

The Mendocino and Murray fracture zones follow the shear net in a very remarkable way³, but they are only two of a vast system of sub-parallel and relatively evenly spaced fracture zones extending to the south. The Molokai, Clarion, Clipperton, Galapagos, Marquesas, and Easter fracture zones⁴ have the same westerly to south-westerly trends across an enormous area of the eastern Pacific spanning 60 degrees of latitude. In the same region, the Vening Meinesz shear net changes direction by about 90 degrees. A two-step migration of the poles was capable of explaining the trend of the first four zones discovered³, but it is not adequate to produce the pattern now known.

Numerous fracture zones have also been discovered in the Atlantic Ocean basin⁵. Almost all trend roughly west. The shear net, on the other hand, trends every direction in the Atlantic, and the only westerly trends are in high northern latitudes. Considering that the intensity of shearing is supposed to be at a maximum in the equatorial Atlantic, the total lack of correspondence appears crucial.

Fracture zones are also common in the Indian Ocean basin⁶ where the intensity of shearing should be weak. Some follow the shear net and some do not.

In sum, the Vening Meinesz shear net shows a close correspondence with the margins of continents, but this is scarcely surprising because it was drawn to do so. It shows little correspondence with the whole pattern of enormous faults discovered on the sea floor during the past 15 years. It appears that this net should be allowed to rest in peace. What could be fruitful would be further appli-

cation of the pioneering ideas and techniques developed by Vening Meinesz for the analysis of global shear patterns resulting from possible changes in speed of rotation and polar wandering indicated by geophysical data.

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Global Network of Mobile Belts

PROF. J. TUZO WILSON¹⁻³ has suggested that mountains, mid-ocean ridges, and major horizontal shear faults are not isolated features, that few come to dead ends, but that they are connected into a continuous network of mobile belts around the Earth which divide the surface into several large rigid plates.

This communication directs attention to a possible continental continuation of the network, based on the interpretation of the British-Scandinavian Caledonian chain⁴⁻⁵, and the Mediterranean and Persian Alpine mountains as narrow mountain systems⁶.

According to new investigations, the graben zones of the British-Scandinavian Caledonian chain (Fig. 1) originated as horizontal shear faults, caused by the main Caledonian stress⁷. The horizontal movements continued in post-Caledonian time, but as a result of epeirogenic Hercynian and Alpine movements between the blocks⁸. These movements have given the fault lines their character of graben zones.

With regard to the Alps, de Sitter⁹ has concluded that in origin the Rhine trend and the Hercynian trend are a simple conjugate set of wrench faults, brought about by the Alpine stress.

Fig. 1. Connexion between the graben zones of the British-Scandinavian Caledonian and the Mediterranean-Alpine narrow mountain systems. Heavy lines represent axes of primary arcs and dashed lines fracture zones