

airplane is extended across a series of pictures. This is used to orient pictures as an assembly tracing is made. Working centers of the picture are established successively on the tracing by a method analogous to plane table resection. Points are referred to bring detail into position. Information available from pictures is valuable in all mapping work, but is particularly valuable in mapping inaccessible mountainous areas and thickly forested regions.

#### CURIOUS SURFACE MARKINGS ON BASALT NEAR McCALL, WASHINGTON

By OTIS W. FREEMAN

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One of the numerous scabland channels that was carved by glacial flood waters in the surface of the Columbia Plateau extends southwestward from Lamont and is followed by the S. P. & S. Railway. Near the railway siding called Macall in eastern Adams County, about 15 miles south of Lamont, are some curious surface markings on basaltic flows exposed in the scabland channel. Apparently these flows were among the last that covered the Columbia Plateau in Washington. Some of the rock surfaces show pahoehoe structures, a characteristic of the younger flows.

On the face and top of a five to ten foot cliff are some curious cracks. These are arranged in fairly good geometric designs, usually polygons. In some of the larger to eight sided polygons are two or three similar smaller designs whose sides were parallel to those of the enclosing polygon with lichens partially filling the cracks. The discoverers believed that these designs had been carved by human beings. At first glance the designs do resemble somewhat deep scratches and gougings made by man. However, no rock fragments were found that might have been left from the work, nor any worn stone tools. Furthermore, the designs are not

paper. From the foregoing compilation, it is clear that consideration of interbasalt beds as a source of the Rattlesnake field gas is well justified.

The gas of the Rattlesnake field is a fact. The presence of some small amount of oil seems well substantiated also. Hence an attempt to evaluate some of the known features of post-Paleozoic stratigraphy seems desirable so as to provide a starting point for future work. It is not in accord with the purpose of the authors to suggest which of the several possibilities seems, on present data, the most probable. On the contrary, it has been consistently pointed out that there are few data which point directly to any conclusion.

Presented at the annual meeting of the Northwest Scientific Association, Spokane, Washington, December 29-30, 1936.

McLearn, F. H., Some Canadian Jurassic faunas: Roy. Soc. Canada, Trans., 3rd. ser., Vol. 21, pp. 61-73, 1927.

McLearn, F. H., Idem.  
Buckman, S. S., Jurassic Ammonoidea. Mesozoic paleontology of Blairmore Region, Alberta: Nat. Mus. Canada, Bull. 58, pp. ..., 1929.

#### Abstracts of Papers Read Before Geological Section N. W. S. A. December 29-30, 1937

Abstracts of papers presented at the annual meeting of the Northwest Scientific Association, Spokane, Washington, December 29-30, 1936.

DISCOVERY OF FOSSIL FISH IN THE LATAH FORMATION  
By VERNON E. SCHEID  
University of Idaho

COMPILED BY JOHN B. MILLER  
University of Idaho

A method is given for the construction of maps from aerial photographs by a radial line resection method as outlined by G. S. Druhot. A straight line which represents approximately the course of the

lick beds of the Payette region and the possible source beds of the Rattlesnake gas. Present drilling operations in the Rattlesnake field have penetrated some fifteen hundred feet beneath the surface in this area. This is well below the position of other interbasalt sedimentary sections so far recorded in the Columbia Basin or adjoining areas. It is assumed that all of these interbasalt sediments were deposited at the same time, or even approximately the same time, it would appear unlikely that any such strata would be found below the zone already penetrated in the Rattlesnake drilling. There is, however, no reason to suspect such contemporaneity in sedimentation over the whole area, and it is plausible to expect interbasalt beds at any stratigraphic position within the whole section. From another point of view, it is also reasonable to consider that a Rattlesnake hills correlative of the thick Payette sediments lies beneath much greater thickness of basalt than appears in the Idaho section. This point involves consideration of the date of the subsidence of the central part of Columbia Basin, a phase of the subject far out of the scope of this

like Indian rock carvings, as there are no pictures of animals nor of human beings and their activities. The designs generally occur on the smooth surface of lava ellipsoids. It appears to the author that as the uneven surface of the lava quickly cooled the crust became too small for the inside of the mass and so cracked superficially to the depth of  $\frac{1}{2}$  inch to one inch. Although weathering has enlarged the cracks and brought the markings out more prominently into relief, the appearance of the rock surface suggests that the cracks dated from the first cooling of the lava. The process would seem to resemble somewhat cracking of the surface of a loaf of French bread. Incidentally, the inside of the lava, as in the bread, is filled with holes from gas bubbles.

A few miles away from this outcrop are three or four dikes of basalt etched out into relief by erosion. The dikes are of basalt that has cooled into columns that lie perpendicular to the walls and which present an appearance somewhat like a pile of wood. Many stone walls were built by early cattlemen in this region for corral purposes. These dikes were thought to be artificial by local residents, but are clearly intrusive. It is impossible to state whether the recent lava flows containing the curious markings emerged from one or more of these dikes or not.

#### STATE LINE EARTHQUAKE

By BENJ. H. BROWN  
Walla Walla, Washington

On July 15, 1936, at 11:05 P. M., an earthquake shock was felt in the region around Milton, Oregon, and Walla Walla, Washington. Many chimneys were broken, several houses moved an inch or two, loose objects and shelf wares were scattered about with some damage. Hundreds of concrete and plastered walls were cracked. One two-story concrete house was restored by making it over into a one-story house. The warden's brick house at the peniten-

tiary has been declared unsafe. Several capstones in the cemeteries were loosened on their bases and slightly rotated. The flow of an artesian well was greatly increased by the shock. The center of the quake seems to have been along an old fault line running west-northwest, through Milton-Freewater and Umapine, Oregon. There also was a secondary line of damage north of the one described extending across the state line into Washington. Occasional aftershocks have been felt during the following months.

The cost of repairing the Milton-Freewater school was \$8500. The writer estimates total loss of \$100,000.

#### AN ANALYSIS OF 45 YEARS OF PRECIPITATION AND AIR TEMPERATURES AT MOSCOW, IDAHO

By G. W. HAMMAR  
University of Idaho

Analysis of the weather data collected at Moscow shows that the most prevalent precipitation differs significantly from the numerical average. The reason for this is that the average is much affected by a few abnormally wet years. It was found that the most probable precipitation for the summer and fall months, July to November inclusive, is only 4 inches while the numerical average is over 7 inches.

The analysis also shows that Moscow has normally two rainy seasons, one culminating in December and January, and the other having its maximum in April and May.

The distribution of the annual precipitation shows the influence of two factors not yet identified with certainty, one

having an annual and the other a semi-annual period.

When the summer, July and August, precipitation is analyzed it is found that the average we receive has been steadily declining during the last 30 years.

The numerically average temperature is very close to the most probably mean temperature for all months of the year.

#### GEOLOGY OF THE CLARK FORK-SANDPOINT PORPHYRY BELT

By ALFRED L. ANDERSON

University of Idaho

A prominent zone of crustal weakness stretching west-northwest along the north margin of Pend Oreille Lake in north Idaho has localized the intrusion of a group of porphyry dikes and stocks. It appears that some time after the molten magma of the Nelson batholith had solidified, but before the liquid lava of the Columbia River basalt was poured out, great shearing stresses related to major earth movements cracked and fissured the earth's crust along the zone mentioned above. Liquid magma was then injected upward into these openings, probably at the time the Rocky Mountains were being built. This magma failed to reach the surface, but solidified a short distance below as porphyries of different compositions, which have since been exposed as a result of deep-seated erosion. Movement has been recurrent along this zone of weakness, and the famous Hope fault along which the rock masses have been displaced many miles is also aligned along the zone and controlled by the same earth stresses. Mineralization in the Clark Fork district has also been localized along this zone of structural weakness.

#### ANNUAL MEETING OF NORTHWEST SCIENTIFIC ASSOCIATION

Is Announced by  
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