no topographic or other reason exists for this change in soil type along the canal line.

From all the information available to the writer these differences are due to irrigation, which has gone on for fifty years or more. Most of the soils affected are very recent and are made up of mineral fragments washed from granitic mountains by torrential rains coming at rare intervals and spread by the floods originating in the desert storms. All the desert soils show much felspathic material, which appears to be comparatively fresh. Apparently the breaking down of these arkosic sands has caused the change in soils which has produced clay loams and clays out of sandy loams.

In the river bottom areas, where the soils are the result of sediments carried by the streams and where moisture has been present much longer than in the true desert soils, the effect is not noticeable. It is in the broad valley areas which slope from the mountains that the soil changes are most evident.

The quality of the water used in irrigation in the Salt River is a factor which should be considered. River water used by the canals in the Salt River project varies from 300 to 500 parts per million total salinity in floods to 1,500 or more parts per million at low flow. In recent years well water, higher in salinity than river water and running as high as 3,000 or more parts per million, has been mixed with the river water or used directly on many areas. In the Buckeye region, dependent in low flow periods on return water, the irrigation supply frequently runs as high as 3,000 parts per million total salinity. It may be that the use of water of this high salinity has had an effect in hastening the soil disintegration.

Two results of this change in the soils are apparent. First, the increase in clay content has made penetration of irrigation water very slow and in many cases it is difficult to get the soil to absorb enough water. This in turn tends to cause an accumulation of salinity in the soil, for where such highly saline waters are used it is necessary to use an excess above consumptive use requirements to leach out accumulating salinity.

The second effect of soil disintegration is the liberation of soluble matter within the soil. This may eventually accumulate in sufficient quantity to damage certain soils.

This short note is written to call attention to the phenomena observed in the hope that some one may be able to investigate the interesting matter.

THOS. H. MEANS

SAN FRANCISCO, CALIF.

UNPUBLISHED POEM BY T. A. CONRAD

IN connection with a discussion of the recent biography by Wheeler[1] of the paleontologist, T. A. Conrad, attention was called to the included unpublished poem[2] by Conrad.

At the time the poem was written, Conrad was paleontologist of the New York State Geological Society. Very probably the reason for his sojourn at Schoharie was because of the residence there of the John Gebhards, father and son, whose excellent collections and work on the Paleozoic section exposed at Schoharie were outstanding.

To a Trilobite

Thou large-eyed mummy of the ancient rocks,
The Niobe of ocean, couldst thou tell
Of thine own times, and of the earthquake shocks
Which tore the ocean-bed where thou didst dwell;
What dream of wild Romance would then compare
With the strange truths thy history might unfold?
How would Geologist confounded, stare
To find their glittering theories were not gold?
Methinks I see thee gazing from the stone
With those great eyes, and smiling as in scorn
Of notions and of systems which have grown
From relics of the times when thou wert born.
Thou ne'er saw glittering fishes in the deep,
Which now in multiform profusion play,
Nor giant shells, nor monsters such as sweep
Along the surge and dash the ocean spray.
Yes, small in size were most created things
And shells and corallines the chief of these;
No land but islets then, nor trees nor springs,
And no tornado thundered o'er the seas.
But the wild earthquake did the work of death,
And heaped the sand and tore the Naiad's cave.
Race after race resigned their fleeting breath—
The rocks alone their curious annals save.
And since the trilobites have passed away
The continent has been formed, the mountains grown,
In ocean's deepened caves new beings play,
And man now sits on Neptune's ancient throne.
The race of man shall perish, but the eyes
Of Trilobites eternal be in stone,
And seem to stare about with wild surprise
At changes greater than they yet have known.

T. A. CONRAD,
Paleontologist

Schoharie, June, 1840.

Although the writing of poems was a well-known phase of Conrad's life, copies of his poems are rare.

KATHERINE V. W. PALMER

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PATHS OF FLIGHT

THE writer has noticed, from the various experiences he has had in dealing with the locusts (*Locusta*

[1] H. E. Wheeler, *Bull. Amer. Paleontology*, 23: 77, 1935.

[2] Written to Mrs. Amelia Caroline Harper Van Patten, June, 1840, at Schoharie, N. Y. The poem is now in possession of John Paul Young, of Ithaca, N. Y., a grandson of Mrs. Van Patten. Thanks are due to Mr. Young for permission to publish the poem.