GEOLOGICAL NOTES

CUBAN JURASSIC

INTRODUCTION

The San Cayetano and the Viñales formations exposed in the Organos Mountains in the Province of Pinar del Rio, Cuba, have been the subject of several articles published during recent years. The San Cayetano formation consists of a thick series of interbedded phyllites, quartzitic sandstones, and marbles, while the Viñales formation is composed almost entirely of dark gray-to-black, fairly thinly bedded limestones. Concerning the relationship between these two formations there has been considerable controversy owing to structural complications and to difficulty in finding contacts. By some geologists it has been contended that the San Cayetano formation lies unconformably below the Viñales limestones, the writers being of this opinion, while by others it has been asserted that the San Cayetano phyllites and quartzitic sandstones lie above the Viñales limestones. Practically all of the geologists who have interested themselves in this problem have followed Brown and O'Connell in ascribing Jurassic age to the Viñales limestones and have attributed either pre-Jurassic or post-Jurassic age to the San Cayetano formation in accordance with their interpretation of stratigraphic relationships. The writers are not in accord with these age determinations and it is for the purpose of setting forth the observations upon which their opinion is based that this article is being published.

GENERAL DISCUSSION

Jurassic fossils have been collected from several localities in the Organos Mountains by various geologists. The best known localities are at Puerto del Ancon and at Mogote Mina Constancia, because they have been reported in publications. Less well known but equally as productive of well preserved fossils are areas at the east foot of Mogote de Guane; at the east foot of Sierra San Carlos about 2 kilometers north of the settlement of Punta de la Sierra; at the south

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foot of Sierra la Abra; at a point 1.5 miles southwest of La Jagua Vieja at a distance of about 100 meters east of the house of Sacario Otero; and at a point about 7 miles N. 20° E. from the town of Vifiales near the house of Elpidio Diaz at La Jagua Vieja, on the trail between La Jagua and La Cañona. At this last locality such characteristic Jurassic ammonites as *Ataxioceras virgulatus* Quenstedt, *Perisphinctes cubanensis* O'Connel and *Perisphinctes plicatiloides* O'Connell have been found.

At all of these localities the Jurassic fossils occur in lenticular limestone or siltstone concretions. Inasmuch as most of these concretions have been found embedded in soil or on talus slopes bordering hills composed of Vifiales limestones, it has been assumed by collectors that they originated in those limestones. Upon this basis the fossils collected from them have been accepted as determinative of the age of the Vifiales formation. That they are not is the opinion of the writers. If they were, similar concretions should be found in place in the limestones of that formation, but where similar concretions are found in place, they occur in the phyllites of the San Cayetano formation, which crops out near the bases of the hills, below the slopes underlain with Vifiales limestone. Fossiliferous concretions, containing Jurassic ammonites, have been found in San Cayetano phyllites at the east foot of Mogote de Guane; at a point about 1½ miles southwest of La Jagua Vieja, near the house of Sacario Otero; and at a point near the house of Elpidio Diaz, on the trail between La Jagua and La Jagua Vieja. From the evidence of these three localities the writers are of the opinion that the Jurassic ammonites collected from loose concretions on talus slopes in the Organos Mountains are weathered from the San Cayetano formation and not from the Vifiales limestones, which the writers believe to be distinctly younger than the San Cayetano, and of post-Jurassic age.

In support of the opinion that the Vifiales limestones are not of Jurassic age it should be noted that fossils have been found in them which are distinctly different from those found in the Jurassic concretions. At La Catalina, a settlement about 10 kilometers northwest of San Diego de los Baños, these limestones contain aptychi and ammonites that are considered of Lower Cretaceous age. Several miles northeast of La Catalina, on the trail between San Cristobal and El Rosario, two good fossil localities have yielded aptychi and ammonites that also have been determined as Lower Cretaceous in age. These fossils, in the opinion of the writers, establish with a reasonable degree of certainty that the Vifiales limestones are of Lower Cretaceous instead of Upper Jurassic age and substantiate the
belief that the Jurassic fossils which have been reported from the Organos Mountains in the Province of Pinar del Río, Cuba, came from the San Cayetano formation and not from the Viñales limestones.

CONCLUSIONS

From their study of the Organos Mountains the writers conclude that: (1) the Jurassic ammonites of Cuba occur in certain members of the San Cayetano formation and not in the Viñales limestones as has been reported; (2) the Viñales limestones are of Lower Cretaceous age; (3) the Viñales limestones lie unconformably above the San Cayetano formation.

The last conclusion is necessarily based upon a regional study, inasmuch as sharp contacts between the two formations are not found. That it is correct, however, is clearly demonstrated by great faunal differences, greater intensity of folding in the San Cayetano phyllites and quartzitic sandstones than prevails in the Viñales limestones, and a much greater degree of metamorphism in the San Cayetano formation.

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Room 405, Edificio La Metropolitana
Havana, Cuba
October, 1934