physical conditions such as soil, moisture, sunlight, etc. No animals exhibit finer geographical variations or depend more completely on a very precise environment. While a certain and even considerable range of adaptability to varying conditions undoubtedly exists in many of the species, this is confined to dominant forms, like certain Myrmicinæ and Camponotinæ, and does not extend to the archaic and relict Ponerinæ, even the most variable of which, like *Odontomachus,* are peculiarly specialized and lacking in plasticity.

But even if the physical conditions of Texas and the other southern states prove to be favorable, it is certain that the kelep will have to reckon with the ant fauna already existing in this region, and in no state of the union is this so extensive and so formidable as in Texas. It is, indeed, probable that the living will be an even greater danger than the physical environment to a species which is very far from being a dominant faunal component even in its native land.

Dr. Cook makes the statement that 'the kelep is as yet the only ant known to attack and destroy healthy boll-weevils.' A few years ago Professor A. Herrera, of the City of Mexico, sent me for identification a species of ant which he found attacking the boll-weevil. I am not sure that he has published any observations on this insect,* which occurs from Colorado through Texas into Mexico, but seems not to be found east of the Pecos River. It may be seen at its best at Fort Davis, Texas, where it forms enormous colonies in grassy places about the cotton wood trees along the arroyos. Although it is extremely predatory and pugnacious, it does not sting. Of course, it is doubtful whether this ant could be induced to live in the cotton-growing portions of Texas, but it seems to me that it would be a better form for experimentation than the kelep, if, as Professor Herrera seems to have found, it really attacks the boll-weevil.

William Morton Wheeler.

American Museum of Natural History,
September 5, 1904.

* Described by me as *Formica subpolita* Mayr var. *perpilosa. Mem. y Rev. de la Soc. Cient.,* 'Antonio Alzate,' Vol. 17, 1902, p. 141.

CURRENT NOTES ON METEOROLOGY.

GENERAL CIRCULATION OF THE ATMOSPHERE.

Dr. W. N. Shaw read a paper on the 'General Circulation of the Atmosphere in Middle and Higher Latitudes' before the Royal Society, on June 2, which he summarizes in *Nature* for July 7. The isobars computed by de Bort for 4,000 meters above sea level indicate a comparatively simple steady motion around the polar axis from west to east, somewhat deflected to south or north by land or sea areas. The computed velocities of air movement on the gradients at this level are not at all unreasonable, and the directions of motion are appropriate, and are confirmed in Hildebrandsson's report on cloud motion. When the weight of the stratum of air between 4,000 meters and sea level is charted by means of sea level isobars, a circulation of the atmosphere from east to west around the cold pole in each hemisphere is indicated. The general surface pressures may, therefore, be resolved into two components, one due to the upper stratum above 4,000 meters which, alone, would produce a general circulation from west to east around the minima of pressure near the poles. The other, due to the lower stratum, if acting alone would produce a circulation from east to west. Both circulations would correspond closely with the surface distribution of isotherms. Where the one is predominant, in the lower middle latitudes, we get a resultant westerly circulation; where the other is predominant, near the poles of cold, we get an easterly circulation. And between the two there is a region of minimum pressure and a merging of the two circulations, which gives rise to the cyclonic storms of the north and south temperate zones. In the lower air the caps of relatively cold air in the polar regions stop the westerly currents which still flow in the lower latitudes, and replace them by currents from the east. Between these two currents mixing takes place, and eddies may be formed.

JAPANESE METEOROLOGICAL OBSERVATORY.

Bulletin No. 1 (1904) of the Central Meteorological Observatory of Japan, contains the following papers: 'Observations of the Earth

Temperature at Tokio,' by W. Oishi, based on the records taken between 1886 and 1902; 'Température moyenne annuelle de la Surface de la Mer dans l'Océan Pacifique Occidental,' by Y. Wada, based on observations from 1882 to 1901, and illustrated by means of monthly and annual isothermal charts; 'The Epochs of the First Ice in Japan for 1902,' by T. Okada, with a chart; and 'Evaporation in Japan,' by T. Okada, which is a contribution of considerable general interest and importance. The present *Bulletin* is the first of a series of publications which are to appear under the title *Bulletins of the Central Meteorological Observatory of Japan.* These bulletins are to be issued at convenient intervals, and are to contain the results of researches on meteorology and allied sciences made by the members of the observatory. It is intended that observations, and their discussion, on special subjects not included in the routine work of the service, shall also be published. The present volume, with the promise of those issues which are to follow later, indicates a high degree of activity in meteorological work in Japan.

VIENNA METEOROLOGICAL OBSERVATORY.

THE annual volume of the *Central-Anstalt für Meteorologie und Erdmagnetismus* in Vienna (1902, date of publication 1904) gives evidence of a constantly expanding sphere of activity of this observatory, under the able directorship of Dr. J. M. Pernter. Among the noteworthy data contained in this publication are the results obtained by means of self-recording instruments on the Sonnblick and Obir (two stations); at Tragöss, the interesting 'North Foehn' station; at Beirut, Jerusalem and Port-au-Prince. Dr. Felix M. Exner has been taken on to the regular staff of the central observatory, and has also recently been appointed *Privat Docent* in meteorology at the University of Vienna. Dr. Exner recently spent several weeks in the United States, making a study of our meteorological equipment at Washington, Blue Hill and other places, and of the methods and illustrations employed in teaching meteorology at Harvard and elsewhere. His work in teaching at Vienna will help to give that city added prestige as a meteorological and climatological center. A supplement to the present volume, which was published some months ago, deals with the question of 'weather shooting,' and was reviewed in these columns.

MOUNTAIN SICKNESS.

Mosso, who has made a considerable study of the physiological effect of higher altitudes, contributed two papers to the *Atti dei Lincei,* for June 19 last, which, according to the abstract published in *Nature,* of August 4, tend to disprove the assumption that the difficulties experienced are due solely to the diminished tension of the oxygen in the air. Mosso now shows that when the barometric pressure of a mixture of oxygen and nitrogen is diminished to one third of an atmosphere, while the proportion of oxygen is increased until its partial pressure is the same as under ordinary circumstances, severe inconvenience, abnormal respiration and pulse action result. That this is not due merely to the increased proportion of oxygen has been shown by a study of the effects produced by breathing pure oxygen on the summit of Monte Rosa. Blood analyses indicate that a diminution in the proportion of carbon dioxide, caused by the low pressure, is probably responsible for the result. This view is upheld by the fact that a mixture of oxygen and carbon dioxide, containing 20 per cent. of the latter, which resulted in dizziness and nausea when breathed at Turin, was attended by sensations of ease and pleasure when breathed on Monte Rosa.

R. DEC. WARD.

NOTES ON INORGANIC CHEMISTRY.

CONDITION OF HELIUM IN PITCHBLENDE.

R. J. Moss recounts in the *Comptes Rendus* an attempt to determine the condition in which helium exists in pitchblende. The mineral was powdered in a vacuum. The chief substance set free was water vapor, and it was accompanied by small quantities of helium, carbon dioxid, nitrogen and oxygen. While about one half of the gas set free, exclusive of water, was often helium, yet the