ated upon in 378 subjects, and also one containing the details of 1,333 tracings obtained from the battalion d'Afrique, as follows:—

Patriotic and religious emblems	91
Professional emblems	98
Inscriptions	111
Military emblems	149
Metaphorical emblems	260
Amorous and erotic emblems	280
Fantastic, historical, and miscellaneous,	344
	1,333

The reader will find this one of the most entertaining and instructive anthropological papers which have appeared in a long time. — (*Trans. anthrop. soc. Washington*, ii. 40.) J. W. P. [585

The Mexican pulque. — "One of the first objects to claim the attention of the conquerors of Mexico," says Carl Beni, "was the maguey-plant (Agave americana; Mexican, *neuttli*). Its manifold uses and products, considered in relation to the inhabitants of that region and to their manner of living, render interesting the study of this vegetable, which is justly called *pianta delle meraviglie*." De Candolle thinks that the plant is of Mexican origin; but the place where it was discovered to furnish a beverage is uncertain, for traditions concerning it are intimately connected with the history of the ancient peoples who occupied the central plateaus of South America. According to the Mexican traditions, Ixquitecatl was the first to invent the method of drawing the sweet juice from the maguey, and Titlacahuan used pulque to intoxicate Quelzalcoatl and to induce him to go into exile. Another legend says, that in 1045 the juice of the plant was introduced as a drink among the royal family. Signor Beni has collected from various sources the references to the uses of this celebrated plant, and in 1876, while in Mexico, made some observations on its cultivation and uses. The following is the analysis of the sap and of the fermented liquor:—

	Sap.	Pulque.
Albuminous substances	25.40	12.57
Sugar	95.53	8.23
Salts	7.26	2.20
Absolute alcohol	0.00	36.80
Water, gas, and waste	871.81	940.20
	1000.00	1000.00

— (*Archiv. per l'antrop.*, xiii. 13.) J. W. P. [586

The use of mollusks. — Dr. A. T. de Rochebrune has written a second memoir upon mollusks among ancient and modern peoples, this time treating of shells in the sepulchres of Ecuador and New Granada. The mounds of the United States furnish some beautiful specimens of aboriginal art in shell, and our archeologists have not been slow in taking advantage of the interest clustering about these objects. The relative rarity of mollusks utilized by the ancient inhabitants of the Peruvian coast is noticed by M. Rochebrune. The farther north we go, the more pronounced this poverty becomes. Indeed, the following five species are all that the author has found from that region:—

1. Spondylus limbatus Sow, statuettes and necklaces.
2. Venus multicostata Sow, spangles, necklaces.
3. Patella olla Brod., bangles, quippus(?) beads.
4. Oliva splendidula Sow, bangles, pendants.
5. Fasciolaria salmo Wood, pieces for clothing.

Two or three of the objects are carved with some elaborateness of design. — (*Rev. d'ethnog.*, ii. 311.) J. W. P. [587

INTELLIGENCE FROM AMERICAN SCIENTIFIC STATIONS.

GOVERNMENT ORGANIZATIONS.

Geological survey.

Comparative paleontology of the Devonian formation. — Prof. H. S. Williams has recently been devoting his attention especially to this formation in western New York, and, in a preliminary report to the director, makes known some interesting facts as a result of his study of the materials collected by him during the past summer.

In the black shales, which in New York lie between beds containing Hamilton faunas below and those bearing Portage faunas above, he has found Lingulas indistinguishable from those of the Cleveland shales; also conodont teeth identical in form with those described from the same Cleveland beds, and Sporangites and Palaeoniscus scales. Species, therefore, regarded by Ohio geologists as characteristic of the Cleveland shales (Waverly), occur together in a similar black shale in New York, which there is known to underlie the upper Devonian. Professor Williams says, however, that, although the identity of the two faunas can scarcely be disputed, he is not so sure that it is an indication of synchronous deposition. The various black shales of Ohio are more nearly continuous there than in New York; and he says it is pretty clear that the intercalated sandy deposits are of a more eastern origin. At the horizon of upper Devonian the sands are purer and of lighter color as we go westward and south-westward; and in some of the quarries of western New York, sandstones very similar to the Ohio Waverly stone are met with. In these sands distinct quartz pebbles have been found, nearly as low as the point where the first member of the typical Chemung fauna is obtained, leading Professor Williams to suspect that true conglomerates may, in some geographical area, have been contemporaneous with the early Chemung fauna. He says the evidences are accumulating in support of the hypothesis that the lower conglomerates are the geographical representatives of deposits of much finer character farther north, in which the Chemung faunas appear. He meets the

argument for a high geological position of the conglomerates (based on an assumed regular dip towards the south-west in this region) by the supposition that conglomerates must express nearness to shore, and that, running along a line from shore into deep water, it is safe to assume that for any given length of time the thickness of the deposit will diminish with the distance from the shore; and hence, if the general relation of shore to deep water continued through the upper Devonian, the dip of the strata will diminish as we ascend in the series, and the tendency of one who depended upon a general rate of dip would be to reckon the more southern deposits too high. Professor Williams has good evidence that this has been done for the sands of Wyoming and Alleghany counties.

Professor Williams's observations lead him to the opinion (which may be modified by further facts), that the sandstones lying at the top of the series at Portage Falls, barren of fossils so far as reported, are, when taken as a mass, stratigraphically identical with the lower Chemung sandstones farther south and west, and that geographical conditions had more to do with the presence or absence of the Chemung fauna than had the geological time of the deposit, after once the Chemung fauna appeared in the sea.

The present stage of Professor Williams's investigations leads him to the following opinion as to the distribution of faunas at this mid-upper Devonian for the eastern area: —

1. A Hamilton fauna coming in from the east and north, and extending around the southern border of the old paleozoic continent into the interior sea, through Canada West, Michigan, etc., to Iowa, etc.

2. A black slate fauna, at first reaching quite to the eastern New York areas, but, with the advance of time, oscillating back and forth, each stage withdrawing farther and farther to the west and south.

3. A sparse Portage fauna, mainly small lamellibranchs and pteropods and cephalopods, rather pelagic in character, common over the New York area, but whose centre or origin he is unable to trace.

4. A Chemung fauna from the south and east, pushing northward with the withdrawal of the Hamilton fauna, mingling with it at first in eastern New York areas, but in western New York not appearing at all until the complete withdrawal of the Hamilton fauna.

There are also traces of a fifth fauna over this region; for, as the Chemung fauna is followed towards the western part of the state, species characteristic of the subcarboniferous of the interior begin to appear, both in the nature of the varietal modifications of the species and in the rare new forms mixed with the Chemung species, leading to the suspicion that the subcarboniferous faunas of the western interior may have been contemporaneous with the Chemung faunas of New York and Pennsylvania. He says, however, that the solution of this problem must be left until a more thorough study of the western interior deposits and their faunas is made, and that the problems involved are too complex to make hasty generalizations safe.

These investigations have been partly in the line of some remarks made by Professor James Hall in the 'Paleontology of New York' (vol. iv. part i., March, 1867, p. 257), where he speaks of the diminution of Devonian types and the augmentation of carboniferous types in the same beds in western New York, and also expresses the opinion that the mingling of Devonian and carboniferous aspects is due to geographical and physical conditions, and not to difference in age or chronological sequence of the beds which contain the fossils. Professor Williams is elaborating this idea, and is dissecting the faunas and tracing them to their centres of distribution.

NOTES AND NEWS.

PROFESSOR SYLVESTER, who has resigned the chair of mathematics at the Johns Hopkins university, and has been appointed to the Savilian professorship of geometry at the University of Oxford, sailed for Europe on Saturday last, Dec. 22. The night before his departure from Baltimore, a farewell assembly was held at the university in his honor. Mr. Matthew Arnold, who was present, made a brief speech. Resolutions were read on behalf of the board of trustees and of the teachers in the university, expressing their profound regret at the departure of Professor Sylvester, and the highest appreciation of his work and of the great stimulus his presence has given to mathematical research in this country. Professor Sylvester responded in a speech of characteristic warmth and *naïveté*, in which, along with most enthusiastic admiration and approval of the university he has helped to inaugurate, he took the opportunity of making some pointed suggestions. One of these was addressed to millionnaires, to whom he indicated several ways in which, while aiding the Johns Hopkins university, they might secure for themselves imperishable fame. Another pointed at the advisability of introducing a system of pensions or some equivalent provision for superannuated and disabled professors; and still another was a protest against the dismemberment of a university library by the establishment of specialized branches. Professor Sylvester's departure removes from the university not only the most distinguished scientific man, but the most interesting personality connected with it; and his absence will make a gap in the general life of the university no less than in his own department. It is hardly to our credit that no American college has conferred an honorary degree upon him during his residence in this country.

— In his recent address to the Royal society, President Huxley states that thirty-eight of the reports of the Challenger expedition have been published, forming eight quarto volumes, with 4,195 pages of letter-press, 488 lithographic plates, and other illustrations. Thirty-four of these memoirs are on zoölogical, four on physical, subjects. Nine reports are now nearly all in type, and some of them partly printed. These will be published within three months, and will form three zoölogical volumes with 230 plates and many