lages, whose stockades, if there were such, have left no traces. Strictly, a part of the earthworks in the western part of Onondaga County belong to this, though forming a small group by themselves. For present purposes it is easier to class them with the next.

The Onondaga group, which I have long studied in all its parts, is of high interest. The Elbridge earthworks, to which I have alluded, are all prehistoric, and are allied to another small group towards the Oswego River. These are circular, and between them occurs a small group of circular stockades, near the Seneca River. All are of Iroquoian character, yet very different from the forts of the Onondagas, who settled in the south-east part of the county three hundred years ago. This county affords seven earthworks, eight stockades, and two burial mounds. The earthworks and stockades are both early and recent, the later stockades being generally angular. Part of Madison County belongs to this group, and in this is found the earliest fort of the true Onondagas, occupied about A.D. 1600. Oswego County forms part of the same group, but has few villages. Three earthworks and one mound occurred near the Oswego River.

The Oneidas occupied Madison more than Oneida County, and in the former have been reported one earthwork and five stockades. Some historic forts may have left no traces. There are many recent villages, but few early. Oneida County affords few remains, though there are some early hamlets north of the Mohawk and west of Utica.

The Mohawk group is mainly in Montgomery county, with one large village in Fulton, of about A.D. 1600, one of the two earliest Mohawk towns. In Montgomery there are some early camps and one earthwork. All the villages except the last mentioned are recent, but the traces of their stockades are lost. The earthwork seems barely prehistoric.

The Jefferson County group is strictly prehistoric, and may be compared with the Chautauqua. It seems to have been the early home of the Onondagas, the Mohawks coming from lower down the St. Lawrence. There are thirty-three earthworks, two burial mounds, and six ossuaries, besides obliterated sites. The mounds reported at Perch Lake are foundations of circular lodges.

A smaller group is in St. Lawrence County, where there are eight earthworks, and possibly related to these are a few nearly opposite in Canada. These two small groups, however, are quite a distance apart.

Detached from these groups, Chemung, Chenango, Otsego, Suffolk, and Tioga, have one earthwork each, and Delaware three. Queens has two stockades, and there are historical notices of many stockades along the Hudson, of which no traces remain. Chenango County had one mound, and Franklin two. Columbia and some other counties had stone heaps accumulating within historic times. The remaining counties have sometimes points of archæological interest, but mainly in a minor way.

It must not be supposed that groups of works indicate always a number of contemporaneous villages, though this was sometimes the case. The Hurons, in Canada, had many towns; so had the Eries and Senecas in New York. The Onondagas, however, had generally one large and one small village at a time, and this was the case with the Oneidas. The Mohawks commenced with two, but soon had three or four. These were often removed, and a number of forts will often show the line of a nation's march.

As far as the interior of the State is concerned, early travel followed the valley of the St. Lawrence in the main, often at a considerable distance from the great lakes and river. The Mohawk valley was little frequented by early travellers. When they reached the west end of Oneida lake, coming eastward, they bore to the north, passing down the St. Lawrence, and sometimes into Lake Champlain. Better fishing and hunting may have caused this. For southern visitors, the Susquehanna afforded a convenient channel, and eventually the tide of Iroquois migration flowed southward through its valley, founding forts in many parts of the Keystone State. A thousand years ago, however, New York may have had few inhabitants, if any, west of the Hudson River Valley, but was a grand resort for fishermen and hunters.

W. M. BEAUCHAMP.

THE SUPPORT OF MUSEUMS.

THE utilitarian tendency of the American mind and habits of life undoubtedly often stand in the way of that broader culture and advancement, the absence of which in us calls for occasional sneers from our transatlantic cousins. "What is the good of it?" a query which demands an answer setting forth immediate returns that can be expressed in money values or equivalent gain, is too often on the lips of those best able to aid inquiry and research which, for the nonce, appears to have no direct bearing on the physical welfare of mankind.

These thoughts are occasioned by facts that have but recently come to the knowledge of the writer regarding the comparatively very limited means at the command of most of the leading museums of natural history in this country. A gentleman, interested in scientific research, well versed in certain departments, having looked the geographical field over, and coming to the conclusion that certain headwaters of the Amazons at present afford the most unknown and unexplored tropical territory now remaining on the globe, decided to give a year or more of his life to exploration in that field. Willing to cast his lot with the natives, to undergo all forms of deprivation familiar to such travellers, that his expenses might be reduced to a minimum, it seemed to him that there should be no difficulty in obtaining the amount of the bare cost of his journey and the transportation of the trophies and valuables he would be able to gather, from some museum in exchange for his entire collections. In his own case, such credit as he might win by scientific and other publications announcing the facts of his discoveries, was quite all that he cared to ask in return for months, perhaps years, of trial and hardship such as few can appreciate and still fewer are able to endure.

Yet, such is the present impecunious condition of the leading museums in our great cities, that after four months of effort in that direction the would-be explorer has been forced to confess his inability to make arrangements that would enable him to go out under these auspices; and the result must now be, what it has so frequently been before, that his material, with all its wealth of truths for the zoologist, botanist, ethnologist, and physicist, will go to London, Berlin, or Vienna. How much longer are Americans going to allow their self-denying scientific enthusiasts to be thus weaned, in deed if not in mind, from their natural desire to contribute to their home museums the results of their discoveries?

This evil does not cover only the field of foreign travel and research. When sums that many men now consider small to be set aside for an evening's reception or entertainment are not forthcoming in New York to purchase for her museum such treasures as the Grote collection of North

American Lepidoptera, which, with its untold wealth of type-specimens and uniques, went to the British Museum, or the Scott collection of the birds of Florida, the result of several years of patient toil on the part of a skilled ornithologist, which found its way into the same mighty storehouse, it can be imagined how quick European science is to profit by this display of parsimony in America.

To recur to the case of the Amazonian explorer, this present apathy can best be shown by quoting from a letter which has just been written to him by one of the gentlemen prominently connected with the American Museum of Natural History in Central Park. After stating that the authorities of the museum appreciate the "advantages to the museum" of the proposition made them, he adds that they "felt it would be impossible to meet its requirements;" yet these requirements were simply that a sum of but a few hundreds of dollars be raised for this purpose. After stating that "the trustees are already overburdened with the load of extra expenditures they have to meet from their own pockets to equip the new exhibition halls," the writer continues, "it would not be practicable for the present to co-operate with you in your very laudable enterprise. . . . Your case, however, is only one out of a score or more of a somewhat similar character which have ended in a similar way — greatly to the disadvantage of our museum."

This is a dark picture, coming as it does from the nation's centre of wealth and business energy, but it is, unfortunately, only a sample of what is of almost monthly occurrence in one or the other of our larger cities. The occasional exception to this, which has made possible the infrequent dispatching of small expeditions, but emphasizes the general rule. Our museums are carried on, made possible, in fact, by the self-denial and enthusiasm of men who, after spending years in attaining a degree of special knowledge fitting them for their scientific positions, are yet willing to accept salaries that would be spurned by book-keepers and country parsons, that they may continue in touch with their chosen walk in life. The idea so prevalent among successful business men that such specialists are as a rule visionaries who are, by the very nature of their long scientific training, unfitted for any other life, is found on the most cursory examination of the facts to be erroneous. The researches of Henry in electricity, of Langley in aeriodynamics, of Goode in icthyology, or Riley in entomology, to take examples from one museum, are none the less practical and of incalculable value to the public, given free to the world as they are, than they would be if they had been protected by ample patents and had yielded their discoverers great financial returns in place of the plaudits of their fellows, best able to appreciate their work, with the which they have been willing to rest content.

It is time that more of our moneyed men were brought to regard this subject in a different light. The country naturally, and with right, looks to New York to set the example in this direction of larger aid for public museums of natural science.

EUGENE MURRAY AARON.

ASTRONOMICAL NOTES.

MR. BERBERICH of Berlin has recently called attention, in a letter to the editor of the *Astronomical Journal*, to some interesting facts connected with the periodic comet discovered by Wolf in 1884. He gives an approximate ephemeris for the return of the comet in 1898, as it will not be greatly perturbed in the interval. From these data it appears that the comet will be favorably placed for observation during its next return. In following returns the comet will not be so favorably placed for observation. As seven revolutions of the comet are nearly equal to three of Jupiter, a second approach of the two bodies will occur in 1922–23, which will probably deprive us of a view of this comet for a long time, and perhaps forever.

Again the telegraph flashes the announcement of the death of another eminent English astronomer and mathematician, Professor J. C. Adams. To Professor Adams is due the grandest work ever performed for astronomy by the human mind — the discovery by mathematical reasoning of our outermost planet, Neptune. At another time we hope to be able to give the readers of *Science* a sketch of his life.

The Sidereal Messenger, which has for the past ten years been published by Professor W. W. Payne, at Northfield, Minn., has been greatly increased in size, and in the future will contain not only subjects in general astronomy, but will take up the subject of astrophysics. In the January number of the magazine will be found the photographs of prominences upon the sun, obtained by Mr. Hale of Chicago. That gentleman will have charge of the astrophysical department of the magazine.

In No. 253 of the *Astronomical Journal* Professor A. Hall gives the result of his discussion of the observations made of Iapetus, the outer satellite of Saturn, made with the large equatorial at the Naval Observatory. The resulting elements for Iapetus give for the mass of Saturn

$$M = \frac{1}{3485.7 \pm 1.28.}$$

The following is a continuation of the ephemeris of Winnecke's comet, which is now due. The epoch is for Berlin midnight: —

	R.A.			Dec.	
	h.	m.	s.	°	′
Feb. 6	12	47	23	+ 17	0
7		47	55	17	13
8		48	26	17	26
9		48	55	17	39
10		49	23	17	52
11		49	49	18	6
12		50	14	18	21
13		50	37	18	36
14		50	39	18	51
15		51	19	19	6
16		51	38	19	22
17	12	51	55	+ 19	39

G. A. H

HAINAN.[1]

THE great island of Hainan, off the south-eastern coast of China, is but little known to Europeans, although since 1877 there has been a treaty port there. Mr. Parker, the Consul at Kiungchow, the port in question, lately made a short journey in the interior of the island, of which he gives some account in a recent report. He travelled about sixty miles up the Poh-Chung River, to within a mile or two of Pah-hi, which is, at most seasons of the year, considered the limit of navigation for all but the smallest craft. He walked round the walls of Ting-an city, one of the disturbed districts during the recent rebellions, on New Year's Day (Feb. 9); they are just one mile in circuit, and differ little from those of other

[1] From Nature.