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.

Chinese cities. Wherever he had an opportunity of walking diametrically across lengthy curves of the river he found the inclosed area to be extremely well cultivated; though not so flat, its general appearance recalled many features of the Tonquin delta, especially in its great wealth of Bamboos. The productions of the soil are much the same, the papaw, areca-palm, sweet potato, turnip, ground-nut, orange-tree, etc.; but a peculiar Hainan feature is the cocoa-nut palm. Another peculiarity of this region is the ubiquitousness of the dwarf *Pandanus*, probably the same as the *P. odoratissima* of Fiji, the fibre of which is used in the manufacture of grass-cloth, and is usually known to foreign trade here as hemp. Much of the land was under sweet potato cultivation, and every household seemed to possess a few pigs, of the very superior and stereotyped Hainan variety, black as to the upper and white as to the lower part of the body, with a dividing line of gray running along the side from the snout to the tail. These wholesome-looking pigs are fattened on the sweet potato, and do not rely for sustenance upon precarious scavengering, as is the case with the repulsive and uncleanly animals of North China. Land contiguous to the river is irrigated by enormous wheels, forty feet in diameter, of very ingenious construction, moved by the current, needing no attention, and discharging perhaps one hundred gallons of water in a minute into the trough above, day and night without intermission. He passed several large pottery establishments; but, as at the New Year all business and cultivation are suspended for a few days, the opportunity was not a very good one for gathering precise information. The temperature during the week ranged between 50° and 60° F. Game seemed plentiful everywhere, and he mentions that a German resident has recently made a very fine collection of about 400 Hainan birds, embracing 154 species, which will shortly be on their way to a Berlin museum. One of the commonest birds in the river is a spotted white and black kingfisher of large size. Amongst the trees which attracted his attention was one locally called the "great-leaved banyan," which looks remarkably like the gutta-percha tree: the natives seem to use its gum mixed with gambier, in order to make that dye "fast;" but there is some doubt whether it is not the sap of the real banyan-tree which is used for the purpose. A very strong silk is made from the grub called the "celestial silk-worm," or, locally, "paddy-insect." This grub is found on a sort of maple. When full-grown it is thrown into boiling vinegar, on which the "head" of the gut, or "silk," appears; this is sharply torn out with both hands, drawn apart, and is as long as the space between them, say five feet; it is so strong that one single thread of it is sufficient to make a line with which to catch the smaller kinds of fish.

SERICULTURE IN ASIA MINOR.[1]

IN May, 1885, the writer was enabled, from personal observation on the spot, to report upon the silk harvest of Bournabat, near Smyrna, Asia Minor, which report was printed in the *Journal* (Vol. XXXIII. p. 852). The sericultural industry was then in a state of slow revival from a condition of almost utter collapse, caused by the deadly effects of the various silkworm diseases which had long devastated, and nearly ruined, the "magnaneries" of France and Italy. Subsequently, in 1887, in an extended and illustrated form, the report was reproduced, with additional sericultural and other information, in the volume entitled "Pen and Pencil in Asia Minor," published by Sampson Low & Co. On both these occasions the writer endeavored to interest the public in the story of an effort, on the part of an English gentleman, to benefit the Turkish peasantry and revenue of the country, which had more of the romantic element in it than is usually to be found in ordinary industrial operations. For nearly half a century Mr. John Griffitt of Bournabat, a village near Smyrna, has devoted most of his leisure hours, well seconded by his accomplished Greek wife, to combatting the maladies of silkworms, experimenting with the various known races, and endeavoring to improve the quantity and quality of their silken produce. Long before M. Pasteur, the distinguished French physiologist, took the field, Mr. Griffitt had been working at the same problems, the solution of which brought the great Frenchman afterwards so much well-deserved honor; but while the one was rewarded the other has hitherto been neglected. The first enjoyed the wealth and influence of his Government to encourage him in all his efforts; the second has had to struggle on unaided throughout his long career of philanthropic endeavor against the inertia of sluggish or hostile officials, the childishness of a prejudiced peasantry, and a horde of unscrupulous native and foreign parasites, ever ready to appropriate his methods without acknowledgment, to claim or dispute his discoveries, and to defraud him in every possible way. From the first, Mr. Griffitt welcomed and applauded the remarkable results of M. Pasteur's investigations, and became his acknowledged disciple; but, being himself a practical silk-farmer, which M. Pasteur was not, was soon in a position to shoot ahead of his master, to modify, supplement, and stamp with his own genius many of the suggestions of the great chemist, for which he never received either credit or reward. Probably in no other country in the world except Turkey could a native, or even a foreigner, accomplishing the revival of a staple industry, as Mr. Griffitt has done, have escaped recognition, or being loaded with honors. He has rescued sericulture, upon which so many thousands, perhaps millions, depend in Turkey, from extinction, and been a means of replenishing the usually collapsed Ottoman exchequer, and enabling the Porte to offer British bond-holders — if it chooses to do so — substantial dividends instead of polite excuses.

Still more recently the writer had a paper in the *Journal* of Aug. 23, 1889 (Vol. XXXVII. p. 772), when further information was given regarding Mr. Griffitt's continued successes, particularly in open-air sericulture. On the present occasion he would add the latest facts, which are quite as interesting as those already communicated.

At the beginning of 1891 a report by the "Chambre des Deputés" was presented to the French Government, in which it was said that sericulture was not progressing in France in consequence of the reappearance of the dreaded disease known as "flacherie," along with some minor maladies, and that the nurseries were being decimated. M. Pasteur's discoveries had enabled the silk-farmers to vanquish the other distemper, "pebrine," but "flacherie" was working havoc everywhere, so a grant of several millions of francs was asked to be expended in trying to crush the disorder.

Meanwhile, Mr. John Griffitt, with no Government money or help of any kind, had thoughtfully built up a system of scientific silk farming at Bournabat, near Smyrna, in which he combined the most notable of M. Pasteur's discoveries with the invigorating method of M. Roland of Switzerland, and his own experiences, with the result that his worms acquired such robustness that he had had no deaths among

[1] From the Journal of the Society of Arts.