show the necessity and worth of the hypotheses advanced. Throughout the inductive method of thought is predominant; but whether the impression left upon the mind of the average student by the disconnected introduction of principles is broad and clear, may be questionable, though the threads are, at least, left in such relation that they may be easily gathered up and properly interwoven.

Thermochemical phenomena claim very considerable attention from the outset, and re-actions are discussed in the light of the law of maximum work. Sometimes, indeed, as it seems, this principle is forced beyond its depth, and phenomena are made to appear as effects of an unvarying law, rather than as illustrations of a principle which has come to be regarded as of by no means universal application. In the main, the spirit of the book is scientific. It is full and minute in the description of processes and facts, well abreast with the times, and for the most part logical and clear, though occasional crudities in the use of English, and now and then an actual lapse from grammatical accuracy, mar, without excuse in a third edition, the general effect. Such faults, though rather less numerous than in the second edition, are particularly noticeable just where they are most undesirable, — in the passages which deal with theories and principles, — and are to be credited largely to the tendency of the translator to cling to the literal rendering of the original rather than strive for an intelligible version. We note with mingled feelings the slight — too slight — improvement over the second edition in the matter of the plate of spectra.

Woman and the Commonwealth. By GEORGE PELLEW. Boston, Houghton, Mifflin, & Co. 8°. 25 cents.

THE pamphlet here before us is a plea for woman suffrage; but we doubt if it will have much influence in promoting its object. The author is so violent a partisan, and so governed by sentiment, that what he says is more likely to repel than attract those whom he wishes to convert. He goes so far as to declare that women are superior to men, both intellectually and morally, and holds that woman's influence in politics would be both purifying and elevating. He examines some of the arguments that have been adduced on the other side, and answers some of them very conclusively; but his reply to others can hardly be considered satisfactory. Moreover, he does not notice what is to many men the chief objection to woman suffrage; namely, the danger that women would be liable to use their political power to enact moral reforms by law, to the great detriment of politics and of morality. There are good things in the pamphlet, however, and those who already agree with its views will doubtless take pleasure in reading it.

NOTES AND NEWS.

THE first number of *The American Anthropologist* has just been issued. It is highly gratifying to record the establishment of a journal of this scope and character, as it is a sure sign of the growing interest in anthropology. The Anthropological Society of Washington, under whose auspices the journal is published, must be congratulated in its new enterprise, which will be highly welcomed by all students of the science of man. The papers contained in the first number show that the journal will embrace all the numerous branches of anthropology. Dr. James C. Welling contributes an inquiry into the law of Malthus; and it is significant of the Washington school of anthropologists that the first paper is devoted to a study in sociology. Col. F. A. Seely, who has so successfully applied the methods used by the Patent Office for tracing inventions to ethnological questions, gives a review of the development of time-keeping in Greece and Rome. Dr. Frank Baker's 'Anthropological Notes on the Human Hand' deals not only with the physiognomy of the hand, but also with current and ancient beliefs referring to the hand. The last paper of the number is a study of the Chane-abal tribe and dialect of Chiapas, by Dr. D. G. Brinton, in which the learned author compares the extant relics of that language, and gives it its proper place among the Maya dialects. Among the articles promised for future numbers, we notice papers by Maj. J. W. Powell, 'From Barbarism to Civilization;' H. H. Bates, 'Discontinuities in Nature's Methods;' and Dr. A. B. Meyer, 'The Nephrite Question.'

— A despatch from Zanzibar says that messengers from Emin Pacha who passed Uganda on Nov. 17 had no news whatever from Stanley, and that no news of his approach had been received in Wadelai. Further, it is stated in the telegram that King Mwanga has taken a friendly attitude towards Europeans. As Wadelai is only twelve days distant from Uganda, it appears that Stanley had not reached Emin's province in the middle of October. The next mail from the Kongo, which is due towards the end of this month, will probably bring some information regarding the events at Stanley Falls and at the mouth of the Aruvimi, which must have been of some influence upon Stanley's expedition. It seems unnecessary, so far, to entertain serious apprehensions as to his safety.

— "A large circle of admirers, both English and American," says the *Pall Mall Gazette*, "will see with pleasure that the Murchison medal of the Geological Society is to be conferred this year on Dr. J. S. Newberry of New York, the well-known professor of Columbia College. Dr. Newberry, however, has been in his time active, and indeed distinguished, in other matters besides geology. 'I remember,' writes a correspondent, 'meeting him by chance in Nashville in November, 1863, when he was at the head of the Western department of the Sanitary Commission, — an immense organization whose business it was to dispense, for the benefit of the soldiers of the Republic, great quantities of stores, consisting mainly of medicines, clothing, and comforts of all sorts, subscribed by enthusiastic citizens of the Northern States. Dr. Newberry took me down with him from Nashville to the then seat of war, on the boundary of Georgia, and I can bear witness to the workmanlike manner in which he administered his department, and the devotion with which he was regarded by all his assistants."

LETTERS TO THE EDITOR.

Errors in 'The Ancient Monuments of the Mississippi Valley.'

IT is an ungracious task to criticise at this late day the work of Messrs. Squier and Davis, which has so long been received as the standard on North American archæology; nevertheless I believe the result will be accepted as a sufficient justification for the attempt.

It is stated in the text (p. 68), under the heading 'The Newark Works,' that the circular structure *E* "is not, as has been generally represented, a true circle; its form is that of an ellipse, its diameters being twelve hundred and fifty feet and eleven hundred and fifty feet respectively. . . . The area of the enclosure is something over thirty acres."

A short calculation will make it evident that an ellipse having the diameters given above will enclose only twenty-six acres. We also notice, that, notwithstanding the authors' statement in the text, their plate (XXV.), which is copied from Colonel Whittlesey's survey, makes the shorter diameter (Section *C–D*), 1,200 feet.

A careful resurvey by the agents of the Bureau of Ethnology makes the diameters 1,205 and 1,197 feet, the latter differing but three feet from Colonel Whittlesey's measurement. The figure is therefore very nearly a true circle, the difference between the diameters being only eight feet, instead of one hundred as given by Squier and Davis.

They also state that the circular enclosure *F*, which connects with the Octagon, "is a true circle two thousand eight hundred and eighty feet, or upwards of half a mile, in circumference." This gives a diameter of but 917 feet, while the section *A–B* of the plate makes it 1,050 feet, — measuring from the gateway to the observatory, — a difference of one hundred and thirty-three feet between the text and plate. According to the survey made by the agents of the bureau, this diameter is 1,058 feet, and the one transverse to it 1,054 feet; the figure varying, in fact, but little from a true circle.

It appears from these facts that the authors, although adopting Colonel Whittlesey's survey in their plate, have differed from it in their text without a word of explanation, the variation in each case being a blunder on their part.

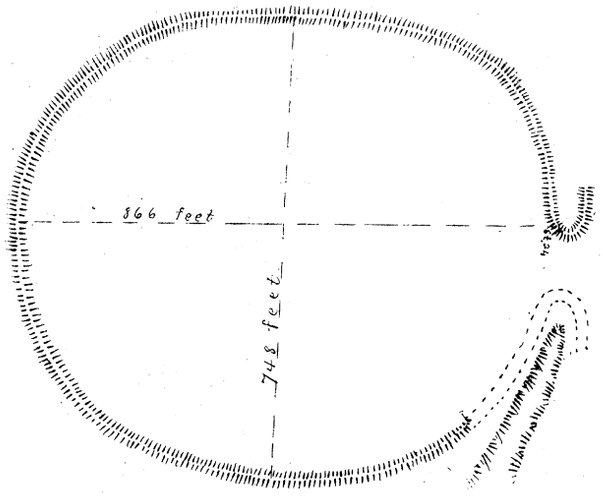
The area of the Octagon, as shown by the resurvey, is but a small fraction over thirty-six acres, including the inner halves of the walls; whereas it is given on the plate as fifty acres, and in the text as "something over fifty acres."

It is apparent that these mistakes cannot be attributed to typographical errors or mere slips of the pen. We are forced, therefore, to ascribe them to unpardonable carelessness.

Turning to their Plate XX., representing the ancient works in Liberty Township, Ross County, we find in a supplementary plan (*A*), a diagram showing their method of surveying circles, of which an explanation is given in a footnote on p. 57. In this note the authors say, "To put at once all scepticism at rest, which might otherwise arise as to the regularity of these works, it should be stated that they were all carefully surveyed by the authors in person." After mentioning their method, they add, "The supplementary plan *A* indicates the method of survey, the 'Field-Book' of which, the circle being thirty-six hundred feet in circumference, and the stations three hundred feet apart, is as follows," etc.

It is certainly disappointing, after this positive assurance of accuracy in their work, and reference to the 'Field-Book,' to find that the circle used in this illustration of their method is purely an imaginary one, as there is no circular enclosure of the dimensions given, either figured or mentioned in their book.

Another reason for being disappointed where such precision is predicated is the fact, ascertained by examination of the works, that



this plate is turned one-quarter round, the left of the page being north instead of the top. Moreover, this error is carried into the plat; the direction of the wall of the square marked 'N. 45 E.' being in truth S. 45 E., and of that marked 'N. 45 W.' being N. 45 E: in other words, the large circle is south of the square, and not east of it as represented in the plate.

A resurvey of the smaller circular enclosure, the only one of the group remaining, proves that it is far from being a true circle. This is clearly shown by the following list of external angles made by the successive chords with each other; or, in other words, the differences in the bearings of the successive chords. The survey was made precisely as suggested by Squier and Davis, except that the chords are each one hundred feet, thus bringing them within the length of a single chain. A gap of 343 feet is omitted, as the wall over this space is too nearly obliterated to be traced satisfactorily.

21° 35′	4° 45′	17° 37′	14° 43′	13° 13′	7° 30′	25° 19′
3 09	10 44	11 35	13 54	17 18	2 63	19 10
20 31	17 16	18 35	19 28	15 29	5 57	12 55

The first course (from Station 1 to 2) was S. 60° W.; from 2 to 3, S. 81° 35′ W.; and so on around, making one hundred feet at each step to Station 23; from 23 to 24, S. 1° 58′ W., 30 feet; from 24 to 1, S. 23° 20′ W., 313 feet. These figures make it clear that there are sharp curves at some points, and nearly straight stretches at others. I insert here a diagram of this so-called perfect circle prepared by Mr. Middleton, who conducted the survey. It will be seen from this that not only is it irregular, but that the longer diameter is 866 feet and the shorter 748, — a difference of 108 feet.

Although there are some puzzling questions connected with these Ohio works, yet it is apparent that the mathematical accuracy of which Messrs. Squier and Davis speak is imaginary, and is based, in fact, upon hypothetical figures. But the worst feature of the case is the evidence thus brought to light of the want of care in their work, thus shaking the confidence which has hitherto been reposed in it. Their allusion to a 'Field-Book' in connection with a purely imaginary circle, is, to say the least, misleading.

CYRUS THOMAS.

Youngsville, Penn., Feb. 8.

Cat Phenomena.

A YOUNG male cat, from the first quite secluded from other associations than those of his home, exhibited great fondness for bottled Tuscan olives when first offered this fruit, eagerly eating it, and rubbing his head and rolling upon the floor where it was dropped. This is repeated on every occasion since. His appetite for olives is seemingly insatiable, and experiments show that it is not because these are salted. He is indifferent to the ordinary culinary aromatics and toilet perfumes. What aromatics are used in the 'aromatized sea-salt' said to be used in the foreign pickling of olives? None are spoken of in the California processes, which, however, include marine salt; but this can have no pertinence to cat-senses. Have others observed the appetite, and will any one who can try cats with unpickled olives, both green and ripe, report the result? The subject has bearings on animal sensation and its relations. A series of various experiments, shutting out the possibility of artificially acquired individual appetites for flavors and odors, would be interesting.

As related to other considerations, it may be mentioned that the cat above referred to, the second time it was offered meat in its early kittenhood, and with a peculiar call therewith for the first time repeated, ran to the meat. Later, after a child had several times tickled the cat's feet by reaching under the open-work weaving of a cane-seat chair on which the animal was sitting, the cat was a number of times observed to repeat the kicking and shaking of its feet on a similar chair with no such stimulus, no person being near the chair. The titillation had become speedily associated with the touch of the cane-seat itself. These facts illustrate the quick and permanent sense-associations of animals, which are the secret of the formation of instincts (along with variation of acts and Darwin's theory of the natural selection of the same), and also of many alleged novel or isolated acts that are construed as rational.

Inherited domestic instinct was shown by the same cat, when, in its early and feeble wanderings as a kitten about the room, it sought a door with signs of a desire to have it opened. From accompanying circumstances, it was inferred that this was connected with some severe lessons on the necessity of personal neatness inflicted on some unknown ancestor: at all events, it seemed to be an inherited sense-association of some kind with the door, and suggests that many so-called 'intelligent acts' may be of this character.

A fact opposed to perception as always the stimulus to instinct is every day verified by this cat, now nine months old, in his vigorous pawing of the wooden box itself and the adjacent wall, after using the dry earth in his large, shallow sanitary box. The perception of soil, rather than of hard box and wall, should alone stimulate the instinct, if such mental act is necessary. In the act of preparatory digging, the perception of soil is manifest. It is absent in the covering process, as above shown; also in the same cat's frequent attempts to cover such food as it refuses at its usual place of feeding, by scraping the oil-cloth of the floor. There is, however, perception as well as sensation in the act of this and other cats when pausing to smell around and locate anew the matter to be covered. The process of covering is the most wonderful part of the instinct, and originally must have been the last acquired: in some cases it seems to be more or less lost; in the same individual cases it is at times omitted or little fulfilled. It is purely automatic. The wonder is, how, in the wild state, it was ever of enough consequence to cats and dogs to be acquired by natural selection; and how it was of sufficient consequence to be thoroughly acquired as automatic, while at the same time it is so poorly ingrained as to habitually blunder, and even fall into much disuse, in some cases. H. W. PARKER.

Grinnell, Io., Feb. 9.