he, with severe pain, passed a hard, flattened, spherical concretion, of a light-brown colour, about two inches in diameter. His diet consisted principally of *oatmeal* and milk. The tumour still remains, and occupies a large portion of the abdomen. The concretions (of which he has passed several about the same size and character) appear to consist of compact masses of the beard of the oat.

Mrs. G. brought her son, a boy four years of age, who, she feared, had got the itch: the eruption appeared suspicious, but did not occupy the usual situations on the body. With a small pair of curved scissors I snipped off a pustule, in which I detected two ova of the *Acarus Scabiei:* this settled the matter at once.

This leads me to state that I have never seen a good representation of the mandibles of the *Acarus.* In a large and beautiful engraving, in the possession of a friend, there is only a slight indication of teeth up the centre of the head, as though the mandibles were single members. Having recently mounted a specimen, which shows the part so well, I have given a drawing (Plate VIII., fig. 3); also the mandibles of some other *Acaridæ.* A mandible consisting of a single member, appears, so far as my observation goes, to be the exception and not the rule in the *Acari.*

The mandibles of *Acarus* of the domestic Fly (fig. 6) appear to be a pair of simple forceps; whilst those of the Water Rat (fig. 14) seem to be a combination of forceps and scissors. There are two *Acari* of the Mole (which has its peculiar Flea, also), one (fig. 11) with the mandible furnished with four barbed hooks, and the other (fig. 12) with only a single hook, similar to that of the rabbit (fig. 13). All the other specimens have double crab-like members.

On a Case *of* Green Pigment-Degeneration *of the* Heart. By Dr. Thudichum.

In March last I gave to the Pathological Society of London an account of a case of green pigment degeneration of the heart, which has been published in the sixth volume of the Transactions of that Society. In a foot-note on p. 141 of the Transactions, I stated that I had since had an opportunity of examining the heart of a man, aged fifty-four, who died of disease of the brain (apoplexy from atheromatous arteries), which presented features analogous to those described in my first observation.

This case I have thought myself justified in recording at full length in this Journal, together with some observations on the present state of the question.

The *aorta* was in a state of atheromatous degeneration, with numerous scales of calcareous deposits.

The *left ventricle* was *hypertrophied* to an enormous extent, the walls being nearly an inch in thickness. The microscopic examination gave the following result:—

The muscular fibres from the outer wall show a granular deposit of a dirty-yellowish colour. The granules are of all sizes and shapes (Plate IX., figs. 1, 2), with a dark outline when well focussed. Their colour is deeper in some parts than in others; in some places it is a pale, dirty-yellowish tint, in others sap-green. The granules are deposited in patches, length-lines, mostly in the axis of the fibre, or singly, scattered about, all apparently inside the sarcolemma. The patches are very often broad and at regular intervals, so that it seems as if they represented transformed nuclei (fig. 2 *b*), particularly as the nuclei themselves are broad, nearly square, with rounded-off angles (fig. 2 *a*). In some places the deposit is principally conspicuous at both ends of a nucleus (fig. 2). The fibres themselves have preserved their transverse striæ; numerous length-lines run along the fibres parallel with their long axis, and crossing the transverse striæ, which thence appear as if they only reached from length-line to length-line (Plate IX., fig. 1).

Acetic acid dissolves the fibres, and leaves the nuclei and the unchanged granular deposit conspicuous.

Though the muscular fibres have a greenish tinge when lying in thick layers, yet this tinge disappears when they are lying singly, and when acetic acid is added, then all tinge, except that of the green corpuscles, disappears.

The septum atriorum showed less deposit in its fibres, which were however more macerated; its striæ were scarcely distinct as such, but gave the fibres an irregularly-shaded granular appearance, like figs. 2, 3.

In one of the *right trabeculæ* where the fibres are most friable, and break into debris on preparation for microscopic examination, the general tinge is deepest, but the deposit, though consisting of many granules, is not very conspicuous, because the granules are very small.

The *right ventricle* is in a state of atrophy, in every respect the reverse of the left. The walls are thin, flabby, and tear like rags. Their fibres are atrophied, pale, and very friable; great masses of fat-cells, or oil-drops, and globules of all sizes are scattered through their tissue. *Smaller fat-drops of the*

usual bluish-white colour, with the dark outline, are seen inside the sarcolemma along with the fine granular deposit. The fat, or oil-drops, from the largest to the smallest (fig. 3 *b*), *become beautifully conspicuous on addition of acetic acid, and so do the granular-yellowish and green corpuscles* (fig. 3 *a*), which thereby manifest themselves as being a distinct deposit, *and not a deposit of fat,* as encountered in what is commonly called fatty degeneration (fig. 3).

A small specimen boiled in ether showed the solubility of all the fat globules in ether, since the granular-yellowish and green deposit remained unchanged. On the ether cooling and acetic acid being added, oil-globules were precipitated again. They adhered to certain projecting parts, or along the nerve fibres, which had the appearance represented in fig. 5, evidently from the fat of the contents of the fibre having been dissolved and deposited again out of the solution against the walls of the fibre. Before boiling with ether the nerves had the usual appearance represented in fig. 4. This proves that mere boiling with ether is not suff ient to remove all fat, but that subsequent washing with repeated small portions of hot ether is necessary in order to remove all fatty matter. The few drops of ether in which the specimen had been boiled, which were clear when hot, became turbid after cooling, and under the microscope showed myriads of oil-globules of a more equal size, and molecules, of which the globules were being formed. None of the oil-globules deposited from the ether were tinged in any way, and the muscular fibres retained their greenish tinge after boiling, and preserved unchanged the yellowish or green deposit. This peculiar degeneration of the heart has been observed by Wedl ('Elements of Pathological Histology' pp. 171, 227), and by Kölliker, quoted by Wedl. Both call the deposit *pigment*, on account of its "dirty-yellowish" colour. What relation there exists between this pigment and "the tapering groups of small, isolated, yellowish granules," seen at either end of the nuclei of the fibres of any healthy heart, as described by Mr. Paget ('Surgical Pathology,' vol. i., p. 128), is a question to be answered by further investigation.

The report on my first specimen given to the Pathological Society by Drs. Habershon and Bristowe, and printed at pages 142 and 143 of the 'Transactions,' though admitting the correctness, on the whole, of my description of the microscopic appearances, is to the effect that the specimen described by me does not differ from the ordinary run of cases of fatty degeneration. The reporters did not find the molecular deposit greener than the fibres, and the latter pre-

sented so very faint a greenish tinge, that they should have passed it unnoticed, had not their attention been specially directed to it. They believe the molecular deposit to be neither green nor pigment, but simply fat. I believe that this discrepancy with my account may be explained by the following circumstances. The patient died on March 10th; I made the post mortem examination on March 13th, which was on a Tuesday. From the day following I had the heart under examination in a warm room during four successive days. On Saturday 17th I intended to give an account of the specimen to the Medical Society of London, but was prevented from doing so, and on that evening the heart went into the hands of Dr. Routh, who put it in spirits of wine, as it was already decomposing by that time. Happily I had on that day exhibited specimens under the microscope to several friends, all of whom found the molecular deposit to be green, one of them, Dr. A. Henry, so much so, that he deliberated with me, what appropriate name could be given to the deposit. Dr. Gibb recollects to the present moment, that he distinctly saw a green molecular deposit in the specimen submitted by me to his inspection. The artist, who made the diagram which I exhibited to the Pathological Society in illustration of my paper, coloured it after specimens under the microscope. The eye of this gentleman is perfectly achromatic, and practised in the minutest distinction of colours. On the other hand, my microscope is equally achromatic. On Tuesday, March the 20th, the specimen was, by the kindness of Dr. Quain, brought before the Pathological Society.

Already, on that evening, I could not succeed in showing the green colours under the microscope, because, as I then thought, the light was too yellow and too strong, being condensed by Gillet's apparatus. But I now believe that it was mainly due to the colour having been changed by decomposition and extracted by spirits of wine. After the meeting of the Pathological Society, the specimen, with several others, was put into strong spirits of wine, and it was only from the 21st downwards, eight days after the post mortem, that the specimen, in spirits, could be examined by the reporters. I therefore humbly submit that their report was not based upon the original appearances, but upon a specimen changed by the united influences of putrefaction and spirits of wine.

On the 24th I gave to Mr. Brooke, of Keppel Street, a mounted specimen for examination. He submitted it to an eminent microscopist, who declared it was nothing which he had not seen before. I requested Mr. Brooke to look at it himself, and he kindly did so in my presence, using per-

fectly white light for illumination. Though in many parts the green colours had entirely faded, the specimen being mounted in water, yet Mr. Brooke found clusters of molecular deposit, the colour of which he declared to be green beyond any doubt. He was quite positive about that. Even when he used a second power in the place of an eye-piece, which arrangement affords an exquisitely high magnifying power, and with a careful adjustment affords a beautifully clear view of the object, the colour of the clusters of molecular deposit appeared to him (and to myself) perfectly green. Two days after there was only a vestige of the deep-green colour left; it had decomposed, and dissolved in the fluid surrounding the specimen.

I have gone to such length, because, if the report of Drs. Habershon and Bristowe stands unexplained, either my veracity or the correctness of my sight might be doubted, and for either I should be very sorry indeed. But happily there are some witnesses to the green colour of the deposit before it was decomposed, and to this fact my character and that of my eye look for protection.

Already, in the note to my paper in the 'Transactions' at the Pathological Society, I have recorded my opinion on that degeneration, the produce of which, said to be fat, does not dissolve in ether. There is no fat, either in the vegetable or animal kingdon which does not dissolve in ether and volatile oils (Lehmann, 'Theoretical Chemistry,' 3rd edit, p. 273.) It is, therefore, an error to call a deposit fat which does not dissolve in ether.

Since I saw green pigment for the first time, I have examined a great number of hearts and found green pigment in three more instances. In one case where the colour was most conspicuous, I was afforded a good opportunity of witnessing how quickly the green colour is changed by decomposition. It was in June; the heart stood for two days on a plate, covered by a saucer; on being uncovered it was found to be in the first stage of putrefaction, viz., smelling badly, covered with greasy matter and exuding brown serum. The green pigment was found to have changed its colour into a dirty earth-brown, and only here and there a faint indication of the former colour could be distinguished.

I think it only just to say that my paper was read and the report thereon given, before I was aware or it had been stated that Wedl and Kolliker mention a similar deposit. Corroboration of my observations is accumulating. Rokitansky, at p. 189 of the new (3rd) edition of his 'Pathological Anatomy,' speaks of granular pigment deposited in striated muscular

fibre, which is undergoing fatty degeneration. At p. 217 he mentions rusty brown granular pigment in muscular fibrils, which have lost their striæ, and in the atrophied muscles of a stump after amputation.

I hope to resume the subject in some future number of the Microscopical Journal.

On the Actinophrys Sol. By J. Weston, Esq., H.E.I.C.

Having during the last two or three months met with a plentiful supply of *Actinophrys Sol*, and fortunately also a most unusual deficiency of professional calls upon my time, I have been enabled to pay these little creatures considerable attention, not, I hope, quite fruitlessly, since the description I am about to give of some of their peculiar habits will, I think, be novel.

I would premise, that as my knowledge of the microscope is in its infancy (something less than two years old), my observations will be confined mostly to *what I have actually seen* and shown to some of my friends, leaving deductions to older hands and abler heads.

I regret that I shall have to call in question the correctness of descriptions given by previous writers; but as I "pin my faith on no man's sleeve," and have rather a method of looking and thinking for myself, I shall fearlessly state what the instrument has revealed, much of which differs so materially from a Paper on the same creature in the 1st volume of the Journal, that I am led to imagine the writer and myself have been observing a different species.

In the first place, then, as there appears to be doubt about the existence of a valvular opening, I have had some thousands of these animalcules under my observation, and have never met with a specimen where the valve was absent. It is best distinguished when about the edge of the *seeming disc*, and so far as my observations go, is never still night nor day; being slowly, but without cessation, as it were, protruded, occupying from ten to seventy or eighty seconds in its development, and then, like the bursting of a vesicle, rapidly and totally subsiding; for an instant it has utterly disappeared, only to be again as gradually and as certainly reproduced. Should that side of the creature, where the valve is placed, be turned from the observer, *the effects* of the contraction are distinctly seen, although the valve itself is not, for at the instant of its burst-