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Mr. William Pigram

To cite this article: Mr. William Pigram (1808) XXVI. Successful application of the magnet, employed to extract a fragment of iron out of the human eye, which had been lodged there about five months, Philosophical Magazine Series 1, 32:126, 154-156, DOI: [10.1080/14786440808562779](https://doi.org/10.1080/14786440808562779)

To link to this article: <http://dx.doi.org/10.1080/14786440808562779>



Published online: 18 May 2009.



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may have operated in the formation of rocks and earths
which have not hitherto been suspected to exist.

It would be easy to pursue the speculative part of this inquiry to a great extent ; but I shall refrain from so occupying the time of the Society, as the tenour of my object in this lecture has not been to state hypotheses, but to bring forward a new series of facts.

XXVI. *Successful Application of the Magnet, employed to extract a Fragment of Iron out of the human Eye, which had been lodged there about five Months. By Mr. WILLIAM PIGRAM, Sen., of Tenterden*.*

Tenterden,
July 12, 1808.

ABOUT five months ago Charles Milsted, a blacksmith, of Tenterden, whilst in the act of striking the head of one hammer against another, on a part of work which required him to strike with great violence, a particle of iron about the size of a small pin's head, flew off from the head of the hammer, and darted into the ball of his left eye ; the accident was attended with extreme pain, and continued without any abatement.

Some weeks after this accident, I applied a magnet to the part injured, with an expectation that it might draw out the particle, but I could only draw out a mixture of powdered rust with the tears. I supposed the salt liquid of the eye had dissolved this calx from the iron. This gave no relief, as the fragment of iron was yet remaining in the eye. A surgeon endeavoured to take it out with the point of a lancet ; but the fragment was firmly fixed, and very near the pupil of the eye, so that it was impossible to touch it with any instrument, but with extreme danger. Being informed the young man was in great agony, and without any hope of relief, I sent for him again this 12th of July, with a desire to try once more what effect the magnet might have. I was

* Communicated by Mr. John Swift, of Fenchurch-street.

the more encouraged, knowing the principle to be correct, and the power to be employed very great. I first examined the eye with a powerful magnifying glass, and I could discover a very small particle of black iron, but covered over with the thin coating of the eye ; the surface was even, and like the other parts of the eye. When I had satisfied myself of the exact situation, and of the impediments which I had to surmount, the eyelids were held open, and I applied the north pole of a combined staple magnet, possessing great power, at the distance of about $\frac{1}{16}$ th of an inch from the eye ; then I used another magnet of less power, but of more convenient construction : thus I continued alternately to apply them both, and at last I could perceive the fragment of iron had projected above the surface of the iris of the eye. This gave me some encouragement, although there was a coating to cut its way through, before the magnet could draw it out. To appearance it was as firmly fixed as a thorn in the flesh, and which prevented it from being drawn out so instantaneously, as the magnet, by its great attractive power, might have done, had the fragment been only loosely floating on the outer surface of the eye.

During this operation the young man frequently thought he felt the fragment rush out of his eye, before it actually was so. This sensation on so tender an organ was most likely produced by the great force with which the magnet attracted the fragment of iron ; and as it was evidently dislodged from its former position, I was the more encouraged to be very earnest in my application. After using magnets of different degrees of power, and in various directions, for the space of about ten or fifteen minutes, the particle of iron cut its way through the thin teguments of the eye, by the power of attraction, and was taken out by the magnet : I must confess that I was surprised to find so small a particle should have been the occasion of such long continued pain ; but when the structure of that tender organ is duly considered, the wonder will cease : by the assistance of glasses, the fragment appeared of an imperfect octagon shape, and armed with rough jagged edges.

As soon as the fragment was drawn out, the eye was instantly
free

free from pain, although many months before, both night and day, the pain had continued without intermission ; and the young man was unhappy from an apprehension that he must lose the sight of that eye, which had been much impaired by the misfortune. A small scar remained on the eye, but it occasioned no pain. The weakest magnet which I used for this operation will suspend a weight of about three pounds, and the strongest will suspend a weight of about fifty pounds. The weakest magnet by its construction, not being so unwieldy to manage as the other, gave me an opportunity of approaching more closely to the organ of sight than I could with the largest ; but I think they both had their use in forcing the fragment to cut its way through the teguments which enveloped it. Not being a medical man, it is probable I may not have given the description so accurately as it might have been given ; but the effect produced, and the manner in which it was accomplished, I think cannot be misunderstood.

I must here recommend to persons who may be induced to make use of the same means to discharge any particles of iron from the eye, not to be discouraged in their application, if the iron should not so suddenly be extracted as they might expect : they should take into consideration the degree of confinement, and every other existing obstacle between the iron and the magnet ; and should not too hastily decline the operation.

I have not stated these particulars as in themselves extraordinary, nor as calculated to excite surprise. We all know that the natural property of the magnet is such, as to attract iron in every possible situation ; and we also know the penetrating force of the magnetic fluid will, with a degree of strength equal to the power communicated, make its passage even through plates of glass, when any particle of iron is within the circuit of its influence. I can therefore only wonder that a means so familiar, and which seems to be pointed out by a law in Nature, should not more frequently be used on such occasions.

WILLIAM PIGRAM Sen.