

a sliding clamp so as to be raised and lowered. The bending of the brass strip under the attraction of the magnet on the ball was measured by means of a telescope and scale, the mirror being fastened to the end of the strip. As the motion of the ball was entirely in a plane perpendicular to the axis of the magnet, the law of variation of force must have been very nearly the same as in the orbit experiments.

When the ball was directly over the true pole, which lay about 1 cm. from the end of the conical pole-piece, the law was nearly that of the inverse cube, the observations being taken between the limits of 3 cm. and 14 cm. from the axis of the magnet. Other series were taken with the plane of motion of the ball at different distances from the pole, and it was found that with the plane of motion at 2.8 cm. from the true pole the law of the inverse square was very closely obeyed between 4 cm. and 14 cm. from the axis. These limits cover the region in which the orbits would in most cases be formed. The exact law of force as determined by least squares from seven observations between the above limits was that of the 2.1 power of the distance.

LOUIS W. AUSTIN.

The University of Wisconsin, Madison, Wis., March 16.

**An Extraordinary Heron's Nest.**

I SEND you a photograph of probably the most extraordinary heron's nest ever discovered in this or any other country. During a gale it was blown from the top of an elm tree in the heronry on Stoke Hall estate in Notts, the seat of Sir Henry Bromley, Bart. It is of unusual size, and almost exclusively composed of wire of varying lengths and thickness; the centre, or "cup," alone being composed of fine twigs, grasses and feathers. Several other nests of the heronry, which had also been blown down, contained pieces of wire cleverly worked in with twigs in the usual way, but this was the only one entirely composed of that material, as far as the main structure is concerned. There are happily now a very flourishing heronry at Dallam Tower, Westmorland, the seat of Sir Henry Bromley's son, Mr. Maurice



Bromley-Wilson, and although I have been familiar with it "off and on" for very many years, and with several other heronries in various parts of the country, I never knew of the birds using wire in the construction of their nests. I have several records of rooks using wire in large quantities in the construction of their nests. Particulars of one very remarkable instance were published in the *Yorkshire Weekly Post* of May 19, 1894, and of another in the same paper for June 23, 1894. Both of these freaks took place in India: one at Calcutta, the other at Rangoon. The other curious feature of the Stoke Hall phenomenon is that there is, and never has been, any lack of ordinary building material, and that all the wire used must have been carried a great distance.

G. W. MURDOCH.  
Westmorland.

**"The Story of Gloucester."**

REFERRING to your article (p. 221), I think you cannot have looked at pages 70 to 117 of the Gloucester Small-pox Epidemic Blue Book, by Dr. Coupland. I have analysed all these cases, and here is the result.

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Description.	Cases.	Deaths.	Deaths per cent. of cases.
"Unvaccinated"—			
These contain 21 cases, 10 deaths, whose description includes the word vaccination or vaccinated ... ..	679	287	42.2
"Vaccinated in infancy," no description of vacc. marks ...	788	91	11.5
Do. "no marks," very abundant small-pox eruption .. ..	35	13	37.1
Do. "one" vacc. mark ... ..	30	3	10.0
Do. two do. ... ..	100	10	10.0
Do. three do. ... ..	141	13	9.2
Do 4, 5, 6, 7 and 8 vacc. marks ... ..	197	13	6.5
Do. (?) v. marks, very abundant eruption .. ..	9	4	44.4
Totals ... ..	1979	434	21.9

The accepted fatality before Jenner's birth was ... 16.6

There were— Cases. Deaths.  
Re-vaccinated cases at Gloucester 173 9 5.2

These had all kinds of v. marks up to 8 in number, and some had been repeatedly re-vaccinated; one "often" re-vaccinated. If the same energy had been put into a critical proof of the vaccination of each one as was into avoiding condemning vaccination, there would be little to show, even in fatality, in the above for vaccination; as it is, it kills every vaccine dogma.

ALEX. WHEELER.

MR. WHEELER, it must be assumed, is wishful to prove that the fatality amongst the vaccinated is as high, or at any rate is not lower than amongst the non-vaccinated. It is surely not necessary for him to separate vaccinated cases into those "with marks" and those with "no marks," since to him it should be immaterial whether a patient be vaccinated or not.

Taking Mr. Wheeler's own classification, we find that of the unvaccinated cases, 679 in number, 287 died, giving a percentage mortality of 42.2; whilst of the vaccinated cases, 1300 in number, only 147, or 11.3 per cent., died. These figures should surely be enough to settle the question as regards percentage mortality, and the mere inclusion of the 21 cases and 10 deaths, whose description includes the word "vaccination" or "vaccinated," does not in any way invalidate the general conclusions to be drawn from these figures.

If now, however, a class for the "under-vaccinated" be included, the second class may be divided into "under-vaccinated" 89 cases with 27 deaths, or 30.3 per cent., and vaccinated 1211 with 120 deaths, giving a mortality of only 9.9 per cent. It is evident that Mr. Wheeler's table in no way conflicts with the figures given in the Report (except in one small particular, noted below), but is based on a misconception of the term "under-vaccination" as used by Dr. Coupland, who used the term to signify those cases of small-pox which had undergone vaccination at any time within the (generally accepted) period of incubation: i.e. fourteen days before the appearance of the rash. In the list of "unvaccinated" cases are included a few which were actually vaccinated in the invasion period. No doubt some of these should be placed in the vaccinated class; but others, again, should be grouped in the unvaccinated class. The Royal Commission reckoned the whole group, instead of a large proportion, in this latter class, which is perhaps not strictly scientific and accurate. Mr. Wheeler, however, goes far further astray in including them all in the vaccinated class, which is clearly erroneous. It may be pointed out in this connection that, in his recently published work, Dr. Cory gives some most interesting facts which tend to show that vaccinal immunity is not obtained until nine days have elapsed after inoculation. It would be easy, therefore, from the table on page 149 of the Report, to divide the total 89, there reckoned as "under vaccination," into two sections: (a) those vaccinated before, and (b) those vaccinated within eight days, of manifesting small-pox. If this were done, there would be added (a) to the