gilt pith balls by silk fibres and then electrify them with the same electricity.

If *suspended* configurations be brought near each other we will cause the vibrations of their component magnets (atoms), and thus we may illustrate the atomic vibrations in molecules. If a suspended configuration be brought in contact with a piece of paper, supported vertically, the interaction of the suspended magnet may force it from the

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vertical, and cause it to fall, and thus may be illustrated the molecular pressure of gases.

I will here point out the stable and unstable configurations. *5a* is more stable than *5b*, and *6a* is more stable than *6b*. The latter is sent into *6a* on vibrating it. *8c* is very unstable (like . . .), and goes into *8b* on vibration, caused by elevating and lowering the superposed magnet.

A. M. MAYER

P.S.¹—As to the configuration it is so *very* unstable that I have not reproduced it in these configurations, for it is really *too unstable* to exist except for an *instant*.

The hexagon only exists with a central magnet. Mr. C. S. Pierce and I have had several discussions about the stability of . . . I always have maintained that it was *impossible* to get this form, for a central repellant body was necessary to the tension of the . . . which is like a soap bubble *without* cohesion of contiguous elements. Seven magnets form *only* . . .

. . . is more stable than . . .

ON A REMARKABLE FLASH OF LIGHTNING²

ON the evening of August 16 last year (1877) a heavy thunderstorm took place in this vicinity (Southport). It was preceded by a fall of the barometer not exceeding one-tenth of an inch, the wind at 1 o'clock P.M. being west, backing gradually until at 9 o'clock P.M. it was south. At the time of the storm to which my present observations refer it was south-west, and conse-

quently its direction was nearly parallel with the coast line.

I was standing at the shore-end of Leicester Street, watching the approach of the storm, and observing the progress and direction of the more important flashes, when about 8 o'clock a vivid flash of lightning fell apparently into the channel (the water being not much above low water mark of a neap tide) about one-sixth of a mile north of the end of the pier. In about a minute afterwards another fell about one-sixth of a mile north-east of the previous one, and after a similar interval a third stream of electricity descended about another one-sixth of a mile in the same direction. The first and third flashes were of the usual character of forked lightning, but the second presented an appearance which I do not recollect to have witnessed before. From its exit from the clouds to its fall into the sea it seemed composed of small detached fragments which caused it to assume the aspect depicted below.

On the following day, in the course of a conversation respecting the storm of the previous evening, I mentioned the phenomenon to Mr. Thistlethwaite, who informed me that he had been particularly struck by the extraordinary

appearance of this singular flash, which he had observed whilst sitting in the "parsonage" (the house adjoining the south-west side of the Manchester and Liverpool District Bank), and which to him appeared exactly as I have depicted it. This gentleman could, however, have seen the upper portion of the flash only, as the houses in Lord Street and on the Promenade intervened between his point of observation and the shore.

Heavy rain seemed to follow in the wake of the third flash, and came on with a noise like that of a great rush of wind, but as the direction of the storm was nearly coincident with the water-line, inclining but slightly towards the beach, about ten minutes elapsed before the downfall reached the place where I stood.

From the information I afterwards obtained the thunderstorm was subsequently, a few miles to the north-east of Southport, more severe than it was in Southport itself.

Southport, March 11

B. ST. J. B. JOULE

¹ Addressed to Sir Wm. Thomson.

² Paper by B. St. J. B. Joule, at the Lit. and Phil. Soc., Manchester.