ing, and the author describes the general appearances of the diseased parts, among which ossification of the arterial trunks was prevalent. He trusts that he has proved that coagulation of the blood in an aneurismal sac, by the means pointed out in this paper, is not only practicable, but that it may be resorted to without the production of any important local or constitutional symptoms.

Sir Everard next details the results of several experiments made with a view of ascertaining the effects of various temperatures upon the spontaneous coagulation of the blood. The separation of serum he finds considerably impeded by a high temperature, but by a heat of 120° the blood is rendered buffy; and if drawn from the arm into a cup immersed in boiling water, and kept for some hours at that temperature, it does not form a complete coagulum. A low temperature also interferes with its perfect coagulation; for when drawn into a cup immersed in ice, and left there, in twenty-four hours the surface had a buffy coat, and the coagulum was extremely loose.

It has been generally believed that the cupped appearance of blood depends upon the coagulable lymph being more contractile when separated from, than when blended with, the other parts of the blood. In a patient who suffered under inflammation of the brain, and who was bled in the course of thirteen days to the amount of sixty-eight ounces, some of the blood, though very buffy, was not at all cupped. Its appearance was very peculiar, and the coagulum was divided into an upper dense portion, having the characters of coagulated albumen; while the lower portion had a gelatinous appearance, and exhibited the albumen in a very attenuated state, mixed with the colouring matter.

On the mathematical Theory of Suspension Bridges, with Tables for facilitating their Construction. By Davies Gilbert, *Esq. V.P.R.S. &c. Communicated March* 9, 1826. Read March 9, 1826. [*Phil. Trans.* 1826, Part III. *p.* 202.]

In this paper the author states that his attention was first directed to a consideration of suspension bridges, when the plan for the Menai Bridge was submitted to the Commissioners of Roads and Bridges. It then appeared to him that the proposed depth of curvature was insufficient for insuring a due degree of strength; and this opinion was confirmed by some investigations, which are printed in the Quarterly Journal of Science. In consequence of this, the interval between the road-way and the points of support has been augmented to 50 feet, and its strength now appears sufficient.

The object of this paper is the expansion of the formulæ, from which the above-mentioned approximation was derived, into tables adapted to general use; and the derivation of other formulæ and tables for the catenary of equal strength; a curve not merely of speculative curiosity, but of practical use when bridges of very wide span are to be constructed. The author first remarks, that as all catenaries,

like circles, parabolas, &c., are similar curves; tables constructed for one value of the parameter apply to all by simple proportion.

He then enters into an analytical investigation of the equations suited for his purpose, and finally concludes his paper with four tables. The first consists of six columns, and contains corresponding values of the parameter; the exponential function or inverse logarithm of the span, divided by the parameter; the versed sine, the length, the tension at the point of support, and the angle of suspension;—all computed for a semi-span of 100 parts, for the ordinary catenary, and for a parameter varying from 1000 to 2000.

Table 2. contains the same quantities for a constant parameter 100, and for all values of the semi-span from 1 to 100.

Table 3. is adapted to the catenary of equal strength, and corresponds to Table 1. in the ordinary catenary; the constant span being 100, and the parameter varying from 70 to 1000, with an additional column expressing the weight of the whole curve; while Table 4. exhibits the same things for this curve, arranged in the order of Table 2.

By the aid of these Tables all the requisite particulars may easily be found in any case proposed in practice.

On Magnetic Influence in the Solar Rays. By Samuel Hunter Christie, *Esq. M.A. F.R.S. of Trinity College, Cambridge; Fellow of the Cambridge Philosophical Society: of the Royal Military Academy. Communicated November* 15, 1825. Read January 19, 1826. [*Phil. Trans.* 1826, Part III. *p.* 219.]

The object of this communication is to show, by a series of experiments, that the sun's rays possess sensible magnetic properties, which are observable in the vibrations of a magnetic needle exposed to them independent of their heating effect; and also to point out the changes which take place in the intensity of a needle's magnetism, from changes of temperature, as deduced from its times of vibration.

The main fact noticed by the author, indicative of a magnetic influence in the solar rays, is this;—that a magnetic needle vibrating, exposed to the rays of the sun, comes to rest more quickly than when vibrating in the shade.

A needle, six inches long, contained in a brass compass-box with a glass cover, was suspended by a fine hair, and made to vibrate, alternately shaded and exposed to the sun. The shade was produced by a wooden screen, supported four feet above the box. It was then found that (setting off from the same point,) the 100th vibration could be very distinctly noted in the shade, but none further than the 75th in the sun. So far, too, from the increase of temperature in the needle having caused the vibrations to be performed slower in the latter case, they were actually executed somewhat more rapidly.