The percentage of nickel is high; but it is pointed out that in the nickel-iron present in meteoric stones the nickel rises in quantity as the quantity of nickel-iron falls. The remaining constituents consist of rocky matter, amounting to 90·621 per cent., and are soluble silicate 54·315 per cent. and insoluble silicate 36·306 per cent. The soluble silicate appears to be an olivine of the form $2(\frac{1}{3}Fe,\frac{2}{3}Mg)O,SiO_2$, or one closely resembling that which occurs in the Lancé stone, which fell July 13th, 1872, and was examined by Daubrée. The insoluble part is chiefly bronzite, and most closely resembles that which is to be found in the meteorites of Iowa co., Iowa, east of Marengo, which fell 12th February, 1875, and were examined by Dr. L. Smith. The aluminium constituent is doubtless labradorite, and is probably present as some of the occasional chondra which are seen in a microscopic section.

A plate showing three views of the stone accompanies the paper.

February 16, 1882.

THE PRESIDENT in the Chair.

The Presents received were laid on the table, and thanks ordered for them.

The following Papers were read:—

I. "On Impact with a Liquid Surface." By A. M. Worthington, M.A. Communicated by Professor Osborne Reynolds, F.R.S. Received January 27, 1882.

(Abstract.)

The apparatus previously used* by the author for following the progress of the splash of liquid drops impinging on a solid plate has been improved. The main principle of the method by which successive stages are isolated and rendered visible remains the same, viz., instantaneous illumination at any desired stage by means of the primary spark of an induction coil; but the timing of the illumination is now effected by a timing-sphere let fall simultaneously with the solid or liquid sphere whose impact is to be observed. The timing-sphere strikes a plate whose height can be adjusted, and thereby starts the mechanical action which results in the spark.

* "Proc. Roy. Soc.," vol. 25, pp. 261, 498.

The time interval between successive stages of the disturbance can be measured to within a few thousandths of a second.

The significant portion of the whole series of changes in most of the splashes observed is comprised within about one-third of a second. The impact of both solid and liquid spheres has been studied, and is illustrated by several series of drawings which accompany the paper.

Milk drops falling into water were found to produce a similar disturbance to that resulting from the impact of similar water drops, and were used for the sake of distinguishing the original liquid of the drop from that into which it fell. With a drop about 5 millims. in diameter, falling from less than 1 metre, an annular rim is raised at the first moment of impact, bounding a hollow which is afterwards characterised by regularly disposed radial ribs and arms, at the bottom of which the drop descends, passing below the surface and becoming completely submerged, to emerge again at the head of a column of adherent liquid, but with its upper portion apparently unwetted by the liquid with which it has been covered. The column then subsides, and the liquid of the original drop is seen to pass into the well-known vortex ring which descends through the liquid.

The influence of velocity of impact in modifying the phenomenon is shown by the drawings.

When the drop is large, and the fall considerable, the rim thrown up takes the form of a hollow crater-like shell of liquid, the mouth of which closes over the drop, imprisoning air which may remain as a bubble on the surface. This is the bubble seen when large rain drops fall into water. Observations of the bursting of this bubble confirm incidentally the explanation lately given by J. Plateau of the manner of bursting of a soap bubble.

The splash of a milk drop in petroleum and in olive oil is also described. The course of phenomena is very similar to that in water, modified however by the greater or less mobility of the liquids in question.

The impact of solid spheres is then described. The nature of the disturbance produced, with a given velocity of impact, is found to depend entirely on the state of the surface of the sphere.

A polished and perfectly dry sphere of ivory or marble 1 to 3 centims. in diameter, let fall from a height not exceeding 1 metre, is apparently wetted at once, and is seen to be sheathed with liquid before the whole is below the average level of the surface. The disturbance of the surface is very slight.

The same sphere if *rough* or *wet* with the liquid in question, behaves quite differently, making a very deep depression, similar at first to that produced by a liquid drop, which finally becomes an almost cylindrical column of air within the liquid, part of which afterwards rises as bubbles while a portion descends in the wake of the sphere.

The influence of roughness in hindering the spread of liquid over the surface of the impinging sphere is then pointed out.

At the close of the paper an explanation is put forward of the radial ribs, arms, and striæ which are a notable feature of all splashes. Measurements of the annular rim bordering a thin central film, into which a drop falling upon a plate passes,* show that the number of the lobes and arms which are subsequently observed, agrees well with the number of drops into which such an annulus would theoretically tend to split if unhindered by friction with the plate on which it rests, and it is then pointed out that the effect of the connecting film would be exactly such as to counteract the influence of this friction.

In the same way the radial striæ and ribs which characterise the hollow formed round a drop or solid sphere impinging on a liquid surface, are accounted for by the instability of the annular rim of the hollow, which through its tendency to cleave into a definite number of drops, determines a corresponding number of lines of easiest flow, at each of which a rib or arm is developed.

The author has observed that after the details have been once revealed by the method of instantaneous illumination, it is not difficult to identify the broad features of any splash that may occur by attentive observation in continuous light. Such observation may afford valuable information as to the condition of the surface of an impinging solid.

II. "The Minute Anatomy of the Thymus." By HERBERT WATNEY, M.A., M.D. Cantab. Communicated by E. A. SCHÄFER, F.R.S. Received January 30, 1882.

(Abstract.)

Three short notes relating some of the facts mentioned in this research have been published in the "Proceedings," vol. 27, p. 369; vol. 31, p. 326, and vol. 33, p. 11.

The paper begins with a history of the views which have been held as to the anatomy, physiology, and development of the thymus.

The microscopical sections in many instances were double-stained by hæmatoxylin, by using first a red and then a blue solution; the colours of the solutions depend on the alum used with the hæmatoxylin extract. The red solutions stain the protoplasm of the cells, the connective-tissue, and the granular cells; the blue, the lymphoid corpuscles and the reticulum.

In all mammals the thymus disappears at some period of adult life;

* "Proc. Roy. Soc.," vol. 25, p. 500, fig. 4.