cal aspect of phrenology’, by classifying the tacts better than Dr. Gall, and also by pursuing them farther into their philosophical, moral, and practical results. At the same time, it appears to be the opinion of many, that he sometimes proceeded to systematize prematurely, and that in his latter years he occasionally modified his views rather through caprice than from reason, or from the accumulation of new observations. It is justly objected to his writings, in compa rison with those of Gall, that in announcing his discoveries, he details neither the circumstances in which they were made, nor the cases by which they are supported. There has been much controversy on the relative merits of these two physicians, in extending the boundaries of phrenology, and elucidating the anatomy of the brain. On this sub­ject, the curious reader may consult the Phrenological Jour­nal, ii. 185, vi. 307, and xi. 225 ; also the preface to Spurz heim’s Anatomy of the Brain.@@1 (c. f.)

SPY, a person hired to watch the actions, motions, &c. of another; particularly what passes in a camp. When a spy is discovered, he is generally treated without mercy.

SQUADRON, in military affairs, denotes a body of horse whose number of men is not fixed, but is usually from one hundred to two hundred.

*Squadron of Ships,* either implies a detachment of ships employed on any particular expedition, or the third part of a naval armament.

SQUADS, in a military sense, are certain divisions of a company into so many squads, generally into three or four. The use of forming companies into as many squads of in­spection as it has serjeants and corporals, is proved by those regiments who have practised that method ; as by it the ir regularity of the soldiers is considerably restrained, their dress improved, and the discipline of the regiment in general most remarkably forwarded. Every officer should have a roll of his company by squads.

SQUALL, a sudden and violent blast of wind, usually occasioned by the interruption and reverberation of the wind from high mountains. These are very frequent in the Mediterranean, particularly that part of it which is known by the name of the Levant, as produced by the repulsion and new direction which the wind meets with in its passage between the various islands of the Archipelago.

SQUARE, among *Mechanics,* an instrument consisting of two rules or branches, fastened perpendicularly at one end of their extremities, so as to form a right angle. It is of great use in the description and mensuration of right an gles, and laying down perpendiculars.

*Square-Rigged,* an epithet applied to a ship whose yards are very long. It is also used in contradistinction to all vessels whose sails are extended by stays or lateen-yards, or by booms and gaffs, the usual situation of which is nearly in the plain of the keel ; and hence,

*Square-Sail,* is a sail extended to a yard which hangs parallel to the horizon, as distinguished from the other sails which are extended by booms and stays placed obliquely. This sail is only used in fair winds, or to scud under in a tempest. In the former case, it is furnished with a large additional part, called the *bonnet,* which is then attached to its bottom, and removed when it is necessary to scud.

SQUARING, or ***Quadrature*** *of the Circle,* signifies the finding a square exactly equal to the area of a given circle. This problem, however, has not been, and probably cannot be, strictly resolved by the commonly admitted principles **of** geometry ; mathematicians having hitherto been unable to do more than to find a square that shall differ from the area of any proposed circle by as small a quantity as they please. The problem is of the same degree of difficulty, and indeed may be regarded as identical with another geo­

metrical problem, namely, the *rectification of the circle,* or the finding a straight line equal to its circumference ; for the area of a circle is equal to that of a rectangle contained by the radius and a straight line equal to half the circumference ; therefore, if a straight line exactly equal to the circumference could be found, a rectlineal space precisely equal to the area might also be found, and the contrary. But although no perfectly accurate resolution of the problem has been obtained under either form, we can always find approximate values of the area and circumference ; and it is now customary to apply the terms *quadrature* and *rectification* of the circle also to these.

The problem of the quadrature of the circle appears to have engaged the attention of geometers at a very early period ; for we are told that Anaxagoras, who lived about live hundred years before Christ, attempted its solution while confined in prison on account of his philosophical opinions. We are ignorant of the result of his researches ; but al though we cannot suppose they were attended with any success, we may reasonably conclude that we are indebted to them for the discovery of some of the properties of the figure, which are now known as elementary propositions in geometry.

Hippocrates of Chios was likewise engaged in trying to resolve the same problem, and it was no doubt in the course of his inquiries into this subject, that he discovered the quadrature of the curvilineal space, which is now known by the name of the *Lune* of Hippocrates. The nature of this discovery may be briefly explained as

follows. Let ABCD be a circle, H its

centre, AC its diameter, ADC a triangle

inscribed in the semicircle, having its

sides, AD, DC equal to one another. On

D as a centre, with DA or DC as *a* ra

dius, let the quadrantal arch AEC be

described, then shall the curvilineal

space bounded by the semicircle ABC

and the quadrantal arch AEC (which

is the *Lune* of Hippocrates), be equal to the rectilineal triangle ADC.

Although Hippocrates’s discovery has led to no important conclusion either relating to the quadrature of the circle or that of any other curve, yet at the time it was made, it might be regarded as of some consequence, chiefly because it shewed the possibility of exhibiting a rectilineal figure equal to a space bounded by curve lines, a thing which we have reason to suppose was then done for the first time, and might have been fairly doubted, considering the insuperable difficulty that was found to attend the quadrature of the circle or its rectification.

Aristotle speaks of two persons, namely, Bryson and An tiphon, who, about his time, or a little earlier, were occu pied with the quadrature of the circle. The former appears, according to the testimony of Alexander Aphrodiseus, to have erred most egregiously ; he having concluded that the circumference was exactly 33/4 times the diameter. And thé latter seems to have proceeded in the same manner as Archimedes afterwards did in squaring the parabola, that is, by first inscribing a square in the circle, then an isoceles tri angle in each of the segments of the curve, having for its base a side of the square ; and next again a series of triangles in the segments, having for their bases the sides of the former series, and so on. This mode of procedure, how ever, was not attended with success, as these spaces do not, as in the case of the parabola, admit of being absolutely summed.

It may be supposed that Archimedes exerted his utmost efforts to resolve this problem ; and probably it was only

@@@, Phrenological Journal, vol. viii ; Memoir by Carmichael. Foreign Quarterly Review, vol. ii.