navy, on account of its expense, of its diminishing the capacity of the hold, and of the erroneous notion that the longitudinal length of the ship was diminished by the obliquity of the ceiling. In 1755, the Academy of Sciences rewarded M. Chauchot, a naval engineer, for the suggestion of employing oblique for transverse riders; and in 1772, M. Clairon des Lauriers employed diagonal strengtheners in the construction of the frigate l'Oiseau.

Having cited these and other instances to prove that Mr. Seppings's principle is not new, at the same time allowing that the merit of rendering its utility probable, and of overcoming many difficulties in its execution, is due to that gentleman, the author proceeds more particularly to inquire how far it contributes to strengthen the vessel, so as to enable it to oppose changes of form from the action of external powers. If every elementary part of the vessel rested immediately on the sea, it would displace its weight of water, and would only be submitted to the slight pressure of the fluid. But as only a part of the external surface of the vessel is in contact with the water, this part is called upon to support a degree of pressure of the fluid capable of counteracting the weight of the whole mass. Hence the vessel becomes convex or arched, the curve extending from the head to the stern; but as this bending is not of constant magnitude, it is evident that, in order to apportion the resistance adequately, the strength must be made greatest where there is the greatest strain. The author furnishes some new theorems for the determination of these points, and thence concludes that the point of greatest curvature lies between the quarter-deck and forecastle, across the gangways, and much nearer the head of the ship than is commonly supposed; and that the effect of the arching is to diminish the fastness of sailing, and to increase the difficulty of performing evolutions, especially with the sails. As vessels, therefore, must inevitably suffer by this effect of arching, any method of diminishing that tendency must be valuable. M. Dupin suggests a method by which it might be ascertained whether Mr. Seppings's plan is calculated to diminish the tendency of vessels to arch; upon which subject he deems Mr. Seppings's experiments, detailed in the Philosophical Transactions, as unsatisfactory. This method, however, has not hitherto been tried, and the question, consequently, cannot be decided upon. In the meantime, says the author, there is every reason to suppose that it would prove favourable to Mr. Seppings's plan.

On a new Fulminating Platinum. By Edmund Davy, *Esq. Professor of Chemistry, and Secretary to the Cork Institution. Communicated by Sir* Humphry Davy, *LL.D. F.R.S. V.P.R.I.* Read February 13, 1817. [*Phil. Trans.* 1817, *p.* 136.]

After pointing out certain analogies between gold and platinum, which rendered it probable that the latter metal would afford a fulminating compound similar to that obtained from the former, Mr.

Edmund Davy proceeds to detail the processes by which he succeeded in procuring it.

A solution of leaf platinum in nitro-muriatic acid was evaporated to dryness, re-dissolved in water, and precipitated by sulphuretted hydrogen. This hydro-sulphuret was converted into a sulphate by the action of nitrous acid. Ammonia, in slight excess, was added to the solution of this sulphate, and the precipitate so obtained boiled in a solution of pure potash. It was then collected on a filter, washed, and dried at 212°. This powder is of a brown colour, explodes with a loud report when heated to about 400°, and lacerates the substance in contact with it, in the same way as fulminating gold. At a temperature of 300° it is decomposed without explosion when in contact with mercury. It explodes by friction, but not by percussion. It is tasteless; insoluble in water, soluble in sulphuric, nitric, and muriatic acids. When heated in chlorine, muriate of ammonia and muriate of platinum are produced. When heated in ammonia and in muriatic acid gas, it is decomposed; and in the latter, with nearly the same phenomena as in chlorine. Heated with sulphur, it affords sulphuret of platinum.

From the method pursued in obtaining this compound, the author inferred its resemblance to fulminating gold; and on heating it in close vessels, obtained water, nitrogen, and platinum, as the results of its decomposition. Heated with common quick-lime, it afforded liquid ammonia and a little nitrogen.

Mr. Edmund Davy next proceeds to a detail of experiments made in order to ascertain the relative proportions of the component parts of this new fulminating platinum.

In these experiments, 10 grains of the powder furnished 7·3 grains of metallic platinum.

In a fourth experiment, nitrous acid was boiled to dryness upon 10 grains of the powder. The dry mass heated red-hot, furnished 8·25 grains of a gray shining substance, which is a hitherto undescribed oxide of platinum, consisting of 88·3 platinum + 11·7 oxygen. From the quantity of nitrogen yielded during the decomposition of the fulminating platinum, and from other experiments, Mr. Davy estimates the quantity of ammonia that it contains, at 9 per cent. and gives as its component parts,

78·75	platinum.	} 82·5 oxide of platinum.
3·75	oxygen.	
9·00	ammonia.	
8·50	water.	
100·00		

This paper concludes with some general and theoretical observations respecting the formation and decomposition of the new fulminating compound. When the triple sulphate of platinum and ammonia is boiled in a solution of potash, the sulphuric acid unites to the potash, a portion of the ammonia is evolved, and the remainder,

entering into intimate union with the oxide of platinum, produces fulminating platinum. The theories invented by Bergmann and Berthollet, to explain the detonation of fulminating gold, are satisfactorily applicable to the phenomena presented by the compound now described, the explosive powers of which may be referred to the sudden extrication of nitrogen, ammonia, and aqueous vapour.

On the Parallax of the fixed Stars. By John Pond, *Esq., Astronomer Royal, F.R.S.* Read February 20, 1817. [*Phil. Trans.* 1817, *p.* 158.]

Dr. Brinkley, of the Observatory of Dublin, having noticed for several years past a periodical deviation of several fixed stars from their mean places, strongly indicating the existence in them of annual parallax, the author was induced to institute a series of observations upon the subject, the results of which are submitted to the Royal Society in the present communication. Being unable to devote the mural circle, erected at the Royal Observatory in 1812, entirely to this investigation, the Astronomer Royal employed two ten-feet telescopes, fixed to stone piers, and directed to the particular stars whose parallax was suspected, and furnished with micrometers for the purpose of comparing them with other stars passing through the same field. The question of parallax is, theoretically speaking, rather curious than important; but with regard to the state of practical astronomy the case is very different, and, as far as relates to the natural history of the sidereal system, it is a subject of interest to ascertain whether the distances of the nearest fixed stars can be numerically expressed from satisfactory data, or whether it be so immeasurably great as to exceed all human powers either to conceive or determine.

The principal stars observed by Dr. Brinkley were, α Lyræ, α Aquilæ, α Cygni.

The mean of forty observations of α Lyræ, made by the Astronomer Royal between June 22 and August 21, gave for the north polar distance of that star $51^\circ\ 23'\ 0''\cdot278$. The mean of twenty observations nearer the period of opposition gave $51^\circ\ 23'\ 0''\cdot468$. The mean of thirty winter observations is $51^\circ\ 23'\ 0''\cdot872$. The discordance, therefore, between the winter and summer observations does not exceed $0''\cdot6$, which is only one third the discordance observed by Dr. Brinkley.

With α Cygni the total discordance in favour of parallax was $0''\cdot556$; also only one third that observed by Dr. Brinkley; and with α Aquilæ it is less than $0''\cdot5$, equal only to one fourth of the discordance observed by Dr. Brinkley.

From these and other observations detailed in the paper, the Astronomer Royal observes, that in the three stars supposed by Dr. Brinkley to have the greatest parallax, the discordance between the summer and winter observations is not less than $0''\cdot5$, and scarcely exceeds $0''\cdot75$: and that although these quantities are much less