which the oyster was attached has usually disappeared, except in those cases in which it was attached to one of its own species. More than half of the specimens have the two valves united and free from adhesions, so that they are capable of exhibiting the phenomenon referred to. More than nine-tenths of these show more or less clearly in the upper valve the figure impressed upon the lower valve by the shell to which the latter adhered.

In most cases this is the figure of a part of the outer surface of a bivalve shell. In a few it is the inner surface of a bivalve shell. In one oyster the figure of part of a specimen of *Cerithium magnirostatum*, Conrad, is clearly shown above and below; in another, *Cerithium libanoticum*, Fraas, with a much better outer lip than is usually found in specimens of the original shell. In two cases the internal cast of a small Cerithium, together with some of the matrix, still adheres to the lower valve of the oyster, while its external form, lost below, is beautifully reproduced upon the upper valve.

In two very striking instances, the lower valve of the oyster shows the impression of a bivalve shell with spiny ribs, while a reproduction of these same spiny ribs appears in high relief upon the upper valve. These reproductions in the upper valve of figures impressed upon the lower valve might be supposed to result from the close contact of two valves when both valves were thin and small, and might be expected to be confined to the region of the umbo in well-grown specimens; but in all cases in which the oyster has been attached by a large portion or all of the lower valve, the impression is reproduced upon a correspondingly large portion of the upper valve. In view of the fact that in most specimens the shell is from 1·5 to 2 cm. thick, and, further, that internal surfaces when exposed show no traces of these external markings, it is noteworthy that the markings should extend over so much of the upper surface instead of being confined to the umbonal region.

ALFRED ELY DAY.

Syrian Protestant College, Beirût, Syria, September 22.

THE peculiar phenomenon referred to in the above letter is well known to occur among Secondary fossils, and has been fully explained by Prof. J. W. Judd in the *Geological Magazine* for 1871, p. 385, where several figures of Oolitic forms are given in illustration. The same peculiarity is also seen in certain oysters from the Lias. The thin growing edge of the shell adapts itself to the inequalities of the surface upon which it grows; the upper valve, being also thin, reproduces the form of the lower valve. The shell becomes thickened by additional layers on the inside, which thus gradually loses the markings that are retained upon the outer surfaces. E. T. N.

Refractivities of the Inert Gases.

A RELATION appears to exist between the refractivities $(\mu-1)$ of the inert gases of the atmosphere and that of hydrogen, which, so far as I am aware, has hitherto escaped attention. The following figures show that, taking the refractivity of hydrogen as 1, the refractivities of the other gases are very nearly in the proportion of ¼, ½, 2, 3 and 5.

By far the largest divergence is in the case of helium. This gas, as I am informed, is difficult to purify from the admixture of the heavier gases, so that a perfectly pure specimen would probably give a better result. Even if the relation to hydrogen is fortuitous, the ratios of the refractivities of the other five gases to one another are sufficiently interesting.

Refractivities[1] observed (Air=1).	Ratio to H.	Calculated from H=0·4733.	Error per cent.
Helium ..... 0·1238	¼	0·1183	−4·4
Neon ..... 0·2345	½	0·2366	+0·9
Hydrogen ..... 0·4733	1		
Argon ..... 0·968	2	0·9466	−2·2
Krypton ..... 1·450	3	1·420	−2·0
Xenon ..... 2·364	5	2·367	+0·1

CLIVE CUTHBERTSON.

9 York Terrace, Regent's Park, N.W., October 10.

[1] Ramsay and Travers, *Phil. Trans.*, vol. cxcvii. A, 1901, p. 47.

Trade Statistics.

IN his reply to my letter (October 2, p. 550), Dr. Mollwo Perkin brings forward fresh figures, apparently proving an enormous decline in British industry since 1870-74. This, however, is but to repeat Mr. Levinstein's mistake in an aggravated form. The Franco-Prussian war in 1870 checked manufacturing abroad for a twelvemonth, and in 1870–74 there was a heavy demand for British iron and coal at excessively high prices. That period, as is well known, is useless for comparisons of British and German export trade.

It is true, as Dr. Perkin points out, that the general rate of increase of exports (*i.e.* of their total values irrespective of the number of producers) has, in the last twenty years, been very slow in this country, rather rapid in Germany and very rapid in the United States.

But if we reckon per head of population, we get the following (from the Board of Trade "Memorandum," "Cd. 1199"):—

Annual Exports ("Special") per head of Population.

Average of period.	United Kingdom.	France.	Germany.	United States.
	£	£	£	£
1875-79	6·00	3·75	3·15	2·81
1880-84	6·66	3·67	3·43	3·30
1885-89	6·18	3·46	3·27	2·59
1890-94	6·15	3·57	3·14	2·95
1895-99	5 97	3·73	3·36	2 92

These figures are distinctly reassuring. They must not be used as an excuse for laxity in education or the application of science to manufacture, but they ought to allay unreasonable pessimism.

The slight decline per head in the British exports (as measured in money, not in commodities) would be a rather unsatisfactory feature if the export trade were our chief trade and chief source of income. Dr. Perkin perhaps thinks that it is, for he translates Mr. Levinstein's "foreign trade" into "trade." But the gross value of the export trade (280 or 300 millions per annum), large as it is, is small compared with the total national income, recently estimated by Sir Robert Giffen at 1500 millions sterling, while the income-tax assessments indicate that it is increasing faster than the population (*Times*, May 23, 1901). This enormous income is, of course, chiefly made up of the value of goods produced and consumed within the country, constituting the internal trade as distinguished from the foreign trade. From this point of view a close scrutiny of export statistics appears to be unnecessary, and may easily be misleading.

Unfortunately, we have no adequate statistics of total production. The figures for pig iron which Dr. Perkin gives are to the point, and the progress of our two great rivals is here very striking. But the pig-iron manufacture accounts for less than 3 per cent. of our national earnings. F. EVERSHED.

Kenley, Surrey, October 10.

Material for Natural Selection.

Verbesina exauriculata[1] is an evil-scented but handsome herbaceous plant with broad orange rays, very abundant in the town of Las Vegas, New Mexico. My class in biology has been making a study of the variations in the number of rays in the heads of this plant, and in so doing we took occasion to compare two sets, from the eastern and western parts of the town respectively. The result was as follows, calling these sets A and B respectively:—

Number of Rays.	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21
Number of heads, set A.	—	—	7	7	31	63	96	30	19	13	7	9	7	3	2.
Number of heads, set B.	1	6	10	19	32	73	84	25	12	5	2	1	—	1	—.

[1] *Verbesina encelioides exauriculata*, Robinson and Greenman, *Proc.* Amer. Acad., May, 1899, p. 544. Notwithstanding the name of this northern type, the petioles of the upper leaves are commonly strongly auriculate.