which can still be seen going on around the coast and harbour. At Mokullo, at a depth of 20 feet, I observed masses of coral (*Aperosa*) almost perfect in shape, covered up with alluvium. It is probable that the whole coast from the mountains has been reclaimed by the action of coral builders, and that eventually the group of islands outside will be joined to the mainland."

I noticed a similar formation of the coral reefs in Suakim Harbour; while at Key West, Florida, there was no lessening of the depth of the water on the edge of the reefs.

DAVID WILSON-BARKER.

THE following table, showing some of the results of work done in connection with the solubility of carbonate of lime in sea-water will be of interest. The difference in solubility between heavy dense corals and the lighter porous varieties is very marked.

TABLE I.—*Showing Solubility of Carbonate of Lime, under different forms, in Sea-water, in grammes per litre.*

Material used.	Temperature.	Exposure.	Mean amount of $CaCO_3$ taken up.	Number of determinations made.
	° C.	Hours	Grm.	
Dead coral, Porites	27	12	0·395	3
Coral sand	27	12	0·032	5
Harbour mud, Bermuda	27	12	0·041	2
Isophyllia dipsacea (Dana), Bermuda	27	12	0·041	6
Millepora ramosa (Pallas), Bermuda	27	12	0·036	7
Madrepora aspera (Dana), Mactan Island, Zebu	27	12	0·073	7
Montipora folioso (Pallas), Amboyna	27	12	0·043	7
Gomastræa multilobata (Qualch), Amboyna ...	10	12	0·073	3
Porites clavaria (Lamk.), Bermuda	10	12	0·093	2

TABLE II.

Weathered oyster-shells	10	12	0·331	3
Mussels allowed to rot in sea-water seven days...	27	168	0·384	2
Crystallized carbonate of lime	10	12	0·123	2
a Amorphous carbonate of lime (freshly prepared)	10	—	0·649	2
b Ditto ditto ditto	−1·66	—	0·610	2
Melobesia, Kilbrennan Sound, Scotland ...	10	12	0·089	3

a and *b*. The carbonate of lime was added as long as it dissolved.

The figures in Table II. will give Mr. T. Mellard Reade facts (so far as laboratory experiments may) upon which to found reasonable views. Mr. George Young, who has made all the determinations under my direction, is one of the chemical staff attached to the Marine Station here.

ROBERT IRVINE.

Royston, Granton, near Edinburgh, April 16.

Note on a Problem in Maxima and Minima.

I SUPPOSE most lovers of elementary geometry who read the communication on the above subject from Mr. Chartres in NATURE of February 2 (p. 320) admired the simple investigation he gave of the problem.

I should like, however, to point out—

(1) That it might be made still more elementary by proving EB + EC = ED without the aid of Book VI.

Let E be any point on the arc of the circumcircle of an equilateral triangle BDC on which the angle D stands, and on ED as diameter describe a circle cutting EB, EC in B′, C′.

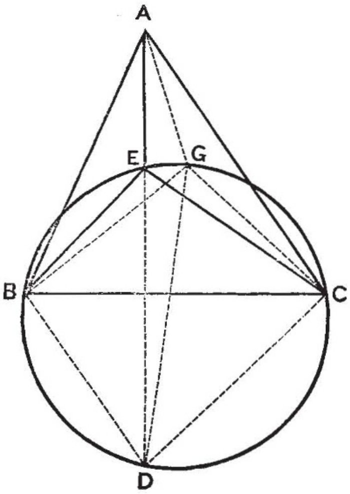
$$\text{Then } \angle B'C'D = \angle BED = \angle BCD.$$
$$\text{Similarly } \angle C'B'D = \angle CBD;$$
$$\therefore \angle B'DC' = \angle BDC;$$
$$\therefore B'C'D \text{ is equilateral.}$$

Hence B′E, EC′ are sides of a regular hexagon inscribed in the circle B′C′D.

$$\therefore B'E + EC' = ED.$$
$$\text{Again, } BD, DB' = CD, DC',$$
$$\text{and } \angle BDB' = \angle CDC';$$
$$\therefore BB' = CC';$$
$$\therefore BE + EC = B'E + EC' = ED.$$

(2) If we assume Ptolemy's theorem (conventionally quoted as Euclid, VI. D) we may as well assume the known extension of it to acyclic quadrilaterals given in Todhunter's "Euclid," p. 318, and at the same time generalize the problem thus—

To find a point E within a triangle such that $l \cdot AE + m \cdot BE + n \cdot CE$ may be a minimum; l, m, n being such that any two are together greater than the third.



On BC describe a triangle BCD such that $BC : CD : DB :: l : m : n$; the point required will be the intersection E of AD with the circumcircle of BCD if E is within the triangle ABC.

$$\text{For } BE \cdot CD + CE \cdot BD = ED \cdot BC,$$
$$\therefore m \cdot BE + n \cdot CE = l \cdot ED;$$
$$\therefore l \cdot AE + m \cdot BE + n \cdot CE = l \cdot AD.$$

But if G is any other point on the arc BEC,

$$m \cdot BG + n \cdot CG = l \cdot GD;$$
$$\therefore l \cdot AG + m \cdot BG + n \cdot CG = l \cdot AG + l \cdot GD;$$
$$\therefore l \cdot AG + m \cdot BG + n \cdot CG > l \cdot AD.$$

And if P be any point within the triangle ABC, but not on the circumference—

$$BP \cdot CD + CP \cdot BD > PD \cdot BC \text{ (Todhunter's "Euclid," [p. 318);}$$
$$\therefore m \cdot BP + n \cdot CP > l \cdot PD;$$
$$\therefore l \cdot AP + m \cdot BP + n \cdot CP > l \cdot AP + l \cdot PD;$$
$$\therefore l \cdot AP + m \cdot BP + n \cdot CP > l \cdot AD.$$

If l, m, n are proportional to a, b, c, E is the orthocentre of ABC.

If l, m, n are proportional to c, a, b, or b, c, a, E is one of the Brocard points of ABC, and the construction for E is equivalent to that of Mr. R. F. Davis for the Brocard points ("Reprint of Mathematics from the *Educational Times*," vol. xlvii. App. II.).

It will, of course, be seen that the triangle formed by drawing perpendiculars to AE, BE, CE through A, B, C, is the maximum triangle with its sides proportional to l, m, n and passing through A, B, C. Prof. Genese has kindly supplied me with an elementary investigation of the problem, depending on the construction of that triangle.

It may also be seen that the question has an intimate connection with one proposed by Mr. Morgan Jenkins in the *Educational Times* for August 1, 1884:—

If on the three sides of a triangle, ABC, there be described any three triangles, BDC, CEA, AFB, either all externally or all internally having their angles in the same order of rotation, and the angles which are contiguous to the same corner of ABC equal to each other, prove that AD, BE, and CF meet in a point O, which is also the common point of intersection of the circumcircles of BDC, CEA, AFB ("Reprint," vol. xliii. pp. 88-91).

EDWARD M. LANGLEY.

Bedford, April 14.

Self-Induction.

I FIND I am being quoted as having said that an iron conductor has less self-induction than a copper one. You will perhaps spare me a line to disclaim any such statement. It is one which seems to me on the face of it absurd.

OLIVER J. LODGE.