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considered only the parallelograms up to the perpendicular to AB, and the result would have had therefore to be doubled.

Fig. 3 is a diagram showing the application to openings through floors, &c. as well-holes under a skylight. The figures apply to the quantity of light passing through the bottom opening $\frac{3}{5}$ 2. The formula is—

Diagonals.	*Sum Sines.*	
1 . 2	× from 0° to 213	
2 . 3	× ,, 132 to 324	
3 . 4 / 4 . 5	× ,, 243 to 516	× ½ =
5 . 6	× ,, 465 to 6°	

Table of the Sums of Sines of Arcs taken at intervals of degrees, from 0° to 90° radius 1, to 2 decimal places:—

Deg.	Sums of Sines.	Deg.	Sums of Sines.	Deg.	Sums of Sines.	Deg.	Sums of Sines.	Deg.	Sums of Sines.
1	·02	19	3·29	37	11·84	55	24·84	73	41·02
2	·05	20	3·63	38	12·25	56	25·37	74	41·95
3	·10	21	3·98	39	13·05	57	26·51	75	42·95
4	·17	22	4·36	40	13·73	58	27·36	76	43·91
5	·26	23	4·75	41	14·36	59	28·21	77	44·99
6	·37	24	5·16	42	15·05	60	29·09	78	45·87
7	·49	25	5·58	43	15·73	61	29·95	79	46·85
8	·63	26	6·02	44	16·43	62	30·84	80	47·84
9	·78	27	6·47	45	17·13	63	31·73	81	48·83
10	·96	28	6·94	46	17·85	64	32·63	82	49·82
11	1·15	29	7·43	47	18·59	65	33·53	83	50·81
12	1·36	30	7·93	48	19·33	66	34·45	84	51·80
13	1·58	31	8·44	49	20·09	67	35·36	85	52·80
14	1·82	32	8·97	50	20·85	68	36·30	86	53·80
15	2·09	33	9·52	51	21·63	69	37·25	87	54·80
16	2·36	34	10·07	52	22·41	70	38·17	88	55·79
17	2·65	35	10·65	53	24·21	71	39·11	89	56·79
18	2·96	36	11·24	54	24·02	72	40·08	90	57·79

NOTE.—To find the sum of sines between any two arcs, deduct the number opposite the smaller arc from that opposite the larger arc, thus: sum of sines from 16° to 61° = 29·95 − 2·36 = 27·59. It will be generally sufficient to use only one decimal place for the sums of sines, and use only for the parts of a foot in measuring the diagonals.

JOHN ABEL AND HIS TOWN-HALLS.—With reference to the notice of John Abel recently given, a correspondent reminds us that views and full particulars of his works there mentioned, are given in Mr. Clayton's "Ancient Timber Edifices," published in 1846. The town-halls of Hereford and Leominster are the most curious and perfect buildings of their kind ever erected, especially the former. The lower part is open, and there were two stories above carried on pillars and arches. In Mr. Clayton's drawings the upper story is restored. The old hall at Weobly and the school-house there, both by Abel, are also represented.

ST. MARY CHURCH, SOUTH DEVON.

THE present condition of the parish church in this village is very deplorable, and efforts are now being made to obtain a more fitting edifice.

Plans have been prepared, by Mr. W. J. Hugall, of Cheltenham: a faculty has been granted for building a new chancel, external to the present church, and rebuilding the whole of the present structure, the area of which, with a considerable addition on the south side, will be covered by the new nave and north and south aisles, and the two chancel aisles. Annexed we give an engraving of the design, and we take from *The Churchman's Companion** the following particulars:—The entire internal length of nave and aisles will be 98 feet; width of nave, 23 feet 4 inches; width of south aisle, 22 feet; width of north aisle, 9 feet 3 inches; length of chancel, 48 feet 6 inches; width of chancel, 23 feet 4 inches; chancel aisles, each 22 feet 6 inches by 16 feet. There will be a south porch 12 feet by 11 feet in the second bay from the west. The nave and aisles will be seated transversely with open benches. The font will stand under a canopy on the west side of the south door; the pulpit against the north pier of the chancel-arch, and the prayer-desk on the opposite side. The chancel is to be stalled on both sides with subsellæ, all formed of cedar.

Four sedilia will occupy the space to the west of the south-eastern window, and in the north a "sedes majestatis," with a high stone canopy, supported on marble shafts, and terminating in a spire, will be set apart for the bishop.

The style adopted by the architect is the Geometrical. The nave is divided from the aisles by arcades of six arches: the nave-aisles communicate with the chancel aisles by means of arches, and the chancel aisles have arcades of two bays, separating them from the chancel. The roofs of the nave and aisles will be open timbered; that of the chancel vaulted in oak, with moulded ribs, and carved bosses.

BOARD OF HEALTH, DERBY.—On Monday, in last week, at a special meeting of the Local Board of Health, Mr. David Jones, of Mansfield, was appointed surveyor to the Board. The committee appointed to examine testimonials, and recommend to the Board, had received fifty-three applications, and selected two candidates out of that number for the Local Board to choose from.

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DR. FARADAY AND JUSTICE TO THE ALCHEMISTS.

WE have occasionally, for the last six or seven years, ventured to withstand the ridicule and contempt to which the old chemists usually called the alchemists had till then been perpetually exposed as the wildest of visionaries and the grossest of impostors. Having had occasion to look closely into the ancient history of chemistry, we found internal evidence in their writings, of the fact, that they were, as a class, neither visionaries nor impostors, and that they were intimately acquainted with the elements we call oxygen, hydrogen, chlorine, even bromine and other of the most recently "discovered" and most recondite of chemical elements. Moreover, we went so far as to point out at some length the singular correspondence between their doctrine of transmutation and Professor Graham's very advanced and enlightened theory of the constitution or nature of metals. As to the alchemists being *merely theorists*, however, in *search of* transmutative agencies, we have clearly shown that this they could not be, for that they gave grave and elaborate, though enigmatical, instructions *how* to transmute the metals, and that therefore they could not rank amongst mere theorists or enthusiastic searchers after such agencies, but must either be the most extraordinary and unaccountable of impostors, or the most practical and matter-of-fact transmuters of metals. The merits of the alchemists are now coming to be regarded in a very different light from that in which they were held before we had the courage thus to question the public opinion in regard to them; and we are now pleased to find a corroboration of the truth of the report that Dr. Faraday, at the last meeting of the British Association, had admitted the principle of transmutation to merit practical investigation; inasmuch as, in a recent lecture by the Doctor at the Royal Institution, on Carbon, it is reported that—

"Towards the conclusion of his discourse, the lecturer spoke emphatically, prophetically almost, on some probable developments of chemistry. The course of experiment had at length brought us, he said, into tracts very similar to those of the alchemists, and although the exact objects proposed by these enthusiasts for solution might not be achieved, chemists are now warranted in expecting results something similar: in short, transmutations of a certain kind, as between elements, were now far from improbable."

Dr. Faraday must reconsider the term "enthusiasts," as applied to the alchemists. As we have shown, they are not entitled to shelter, from utter condemnation as the most unaccountable of liars and impostors, under any such soft and amiable title as that of "enthusiasts." If their *positive teachings* be not irrefragible *truth*, as they solemnly assert them to be, they must be deliberate, unmitigated, and most inexcusable falsehoods, not mere hopeful and "enthusiastic" theories, hypotheses, or illusions. This is a curious question, and one of grave importance in this Californian "age of gold."

NATIONAL EXHIBITION OF ARTS AND MANUFACTURES AT CORK.

THE Exhibition of Irish arts and processes at Cork has been opened: trumpets have been blown, banquets eaten, balls attended, and the fact is accomplished. That it may prove advantageous to the sister country we sincerely hope: at all events, it has given pleasure to many, and will send an extra number of tourists to a country which they ought to know. Our readers are already aware of the size of the various apartments in which the Exhibition is held. The nucleus of the building is the Corn Exchange, which stands upon Albert quay. To this an addition was made, now called the Fine-Arts Hall, 177 ft. long and 53 ft. wide, with a semi-circular roof, with laminated girders, lighted from a continued top-light 20 ft. wide. A semi-circular end serves as the orchestra. The ball and banquet rooms are fitted up with fluted coloured cotton, with banners and shields: the Fine-Arts Hall is hung with "flocked calico" of crimson colour, a new material executed by the tradesmen in the building.