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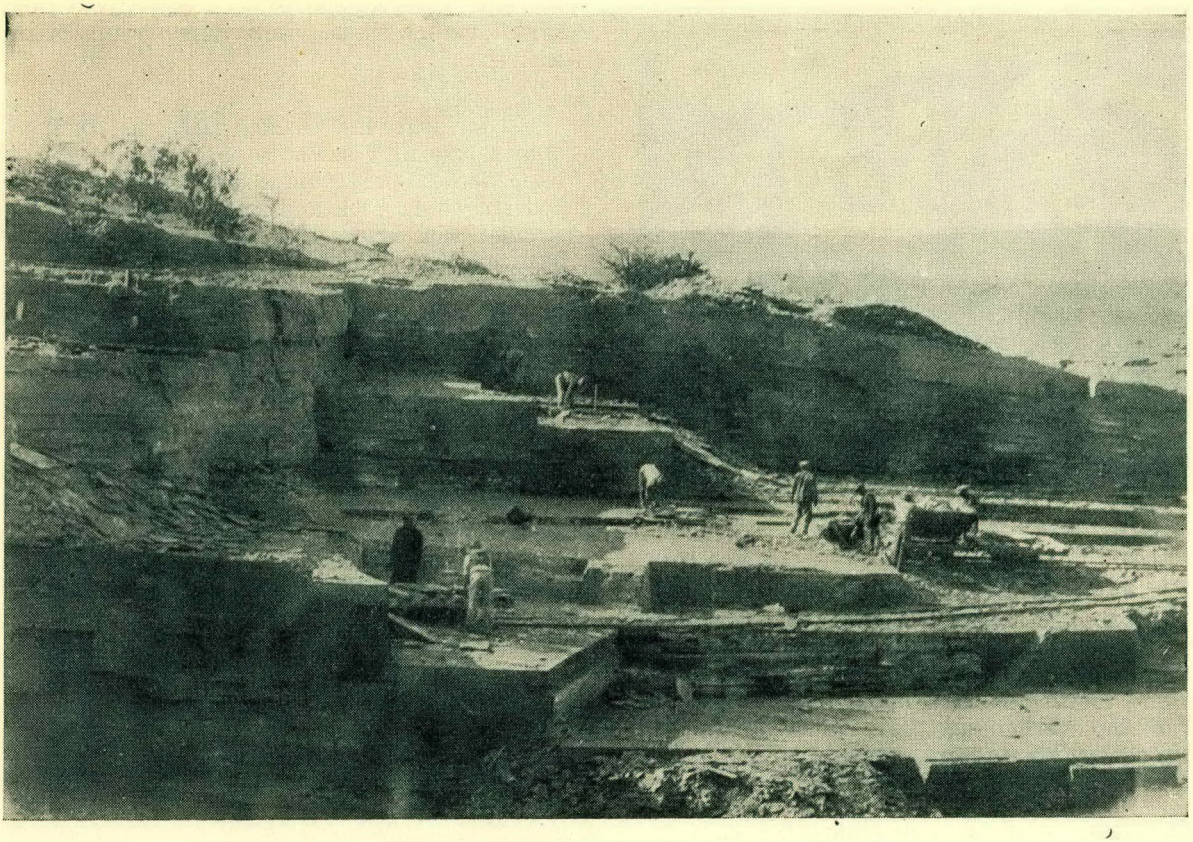
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Institutes of South African Architects and the Chapter of South African Quantity Surveyors

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General View of the MAZISTA SLATE QUARRIES

further, until little or no clay remains, the chief constituents being mica, quartz and chloride. As chloride is also flaky and micalike in character such a rock is termed "mica slate." Mica slates are more resistant to absorption and therefore more enduring than clay slates.

Chemical Composition. The chemical analysis of Mazista slate compares very favourably with other prominent slates, as given below:

ANALYSIS OF SLATES.

	Mazista.	Best German Thuringian.	Nantlle.	Llangynyog N. Wales.	Ordinary Welsh.
	%	%	%	%	%
Silica	61.44	60.4	48	60.2	60.5
Alumina	28.37	21.4	26	24.2	19.7
Oxide of Iron	6.11	6.8	14	7.7	7.8
Magnesia ..	2.2	0.3	8	4.3	2.2
Soda	Trace	1.0	—	4.3	2.2
Lime	—	5.6	4	4.3	1.1
Water and Organisms	Trace	5.0	—	3.7	3.3

Company's Products. Owing to the fact, that splitting slate and non-splitting material are found in the same quarries the Company's products are the following two: Roofing slate, Slab slate (generally called "Mill-stock").

Quarry Operations. Clay with broken and decayed rock are the chief overburden constituents. Overburden from two feet to ten feet in thickness must be removed to reach the good slate beneath. To facilitate the removal of the overburden blasting is done in parts, to break the rock into small fragments. After sufficient overburden is removed, the commercial slate is quarried by first setting a larger mass free, which is subdivided into slabs small enough to be moved by derricks and by hand on to the trolleys. Notches are cut into the bench face in a line parallel with the slatey cleavage and a split is made by driving wedges into the notches. When a block of the desired size is broken loose it is raised by means of heavy bars with curved ends. Freeing the rock is sometimes slow and difficult, not only because of its weight, but because of many interlocking corners that must be actually broken. When the block is sufficiently raised, a fragment of rock or a wedge is dropped in the crack, the bars are placed in a more advantageous position and the process continued until the block is free.

The blocks of splitting slate are sent to the splitting shanties for the manufacture of Roofing slates. The larger slabs of unsplitting material are sent to the mill for the manufacture of slab-slate.

Manufacture of Roofing-Slates. The first operation in the splitting shanties is to split the blocks into sheets of convenient thickness and size, that is of $\frac{1}{4}$in. to $\frac{3}{8}$in. thick. The splitter uses a wide flexible splitting-chisel and wooden wedges. The split sheets are then conveyed to the trimmers, who cut them into rectangular



Splitting Slates

shape ; first the slates are marked out from templates and then cut to the marks either with handknives, resembling large pairs of scissors with one fixed and one moveable blade, the slate being laid on to the fixed blade and the moveable blade being operated by the boy to cut off the overhanging part of the slate ; or the trimming is done with a rotary machine with a curved blade similar to the cutting blade of a lawn mower. These rotary trimmers are run by foot-treadles, the boy having both hands free for handling the slate.

The usual sizes to which the slates are cut are : 20 x 10, 18 x 10, 16 x 10, 14 x 10, 12 x 10, 16 x 8, 14 x 8 and 12 x 8 inches.

The finished slates are taken from the trimmers, counted, and loaded on to trolleys, to be taken to the piling yards on the Railway siding.

The final operation, before the slates are railed consists in punching two holes in each slate, through which the nails are driven, when fixing the slates on the roof. This is done by hand or treadle operated punching machines, drilling the two holes simultaneously.

Manufacture of Slab Slate. Slab slate, also called "structural slate," is chiefly used for interior structural and sanitary purposes. The chief products are mantels, floor-tiles, steps and risers, flagging, skirting, window sills, lavatory slabs, table tops, wainscotting, sinks, shelves.



Cutting Slates

The large and thicker slabs, as coming from the quarry are first sawn to the size, to which they are best adapted. The marked slabs are placed on the saw bed travelling back and forth and sawn by means of a circular saw blade, the rim of which is fitted with a hard abrasive material. When the sawing process is completed, the blocks are conveyed to a planer where the surfaces are finished. The planer bed travels back and forth in the same manner as the saw bed. The tool consists of a heavy blade set horizontally and adjustable laterally and vertically. As the slab is carried on the travelling bed, the sharp tool planes the surface of the slate. With each motion the tool is moved laterally until it has passed over the entire surface. If all irregularities are not removed the tool is set at a lower level and the block replaned. The opposite side is planed in the same manner, special care being taken to obtain the desired thickness for the finished product



Stacking Slates

Some allowance is made for removal of slate during the subsequent process, such as rubbing and honing.

When the slabs of slate are taken from the planer, if a smoother surface is required, they are placed under a polishing machine, called a buffer. The buffer consists of two moveable arms, one attached to the other and holding a rotating buffer head. The latter is belt-driven, the rotating head may be moved about to any desired position and is provided with a block of polishing material, usually a finely powdered strong abrasive. A stream of water is directed to the surface, and the rotating head moved to and fro until a fine polish is obtained. The finished material is carted to the storage yard at the siding until railed.

The company's mill is capable of a monthly production of 10,000 square feet of structural slate.

The power for the driving of the mill is obtained from a steam engine, the individual machines being belt driven from a general shaft. The water is supplied by the Company's own pump-station.

BUILDINGS IN WHICH MAZISTA SLATES HAVE BEEN USED.

Police Barracks, Marshall Street, Johannesburg, Roofing.

Royal Mint, Pretoria, Roofing.
Barnato School, Johannesburg, Roofing.
Technical College, East London, Slab.
Standard Bank, Pietermaritzburg, Roofing and Slab.
Standard Bank, Durban, Roofing.
St. Albans Church, Johannesburg, Roofing and Slab.
St. Mary's Cathedral, Johannesburg, Slab.
De Beers Diamond Factory, Kimberley, Slab.
Block of Flats, Seapoint, Capetown, Roofing.
Parkview Golf Club House, Johannesburg, Roofing.
Hilton College, Hilton, Natal, Roofing and Slab.
Rhodes' Hospital, Grahamstown, Slab.
Grey Hospital, Kingwilliamstown, Slab.
Belmont Flats, Durban, Roofing and Slab.
Club Arcade, Durban, Slab.
Royal Arcade, Johannesburg, Slab.
English Church, White River, Roofing.

And numerous other Buildings and Houses throughout the Country.

LIVERPOOL CATHEDRAL.

ARCHITECTURAL ROMANCE OF TO-DAY.

(A paper read by Mr. W. Lucas F.R.G.S. at the Institute of Technology, Sydney.)

Liverpool Cathedral was the subject of a lecture delivered by Mr. William Lucas, F.R.G.S., at the Gordon Institute of Technology last night. The lecture was exhaustively illustrated by lantern slides, which had generously been donated to the Institute's School of Architecture by Mr. Howard Hitchcock, C.M.G.

Monsignor Benson, who presided, introduced the lecturer.

Mr. Lucas traversed the history of the movement relating to the cathedral, making reference to remarkable coincidences as affecting the careers of three generations of the family of the architect. In no instance, in his opinion, has architecture within the past fifty years been more packed with romance, both the grandfather and father of the architect making noble contribution. The diocese of Liverpool was founded in the year the architect was born, and the advertisement of the competition appeared in the very month of his coming of age. It was felt that at that period, the beginning of this century, by many leaders that it would be impossible to obtain a satisfactory edifice in the Gothic style. In fact, a recent occupant

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of the chair of the Royal Institute of British Architects wrote: "Gothic architecture of to-day is an impossibility," while another ex-president said: "If restrictions as to style need to be imposed at all, Gothic should be excluded." However, there was excellent response, and two Australian-born architects were highly placed, C. A. Nicholson being among the first placed, and Hubert Corlette highly commended, Giles Gilbert Scott being placed first for a design which the assessors reported "possessed the qualities they looked for in a cathedral pre-eminently shown," he being then at the time of the award not quite twenty-three years old. That design was prepared in leisure, quite apart from office hours.

Proceeding, Mr. Lucas told of the dilemma in which the committee considered that they found themselves owing to his inexperience. The situation was only saved by Norman Shaw pressing his co-assessor (G. F. Bodley) to offer to sponsor the young man in the capacity of a joint architect. Four years later Bodley died, and Scott was appointed sole architect. Naturally, restless to make the most of his great opportunity, modification after modification was submitted to the committee, and so great confidence was reposed in his ability that throughout, to all intents and purposes, he has had a free hand. Writing to Mr. Lucas in those early days, Scott said: "I suppose no one ever reached his ideal. I am very far from my ideal of a cathedral." The Lady Chapel was completed and consecrated before its architect was thirty years of age, and the choir in 1924. One can safely say that during the past fifty years no architectural work has so commanded the appreciation of the Press and the architectural profession. The *Times*, for instance, remarked on "the successful expression of this modern transfiguration of the Gothic spirit," whilst the president of the R.I.B.A. last year said "Sir Giles Gilbert Scott, at Liverpool, is adding stone to stone to what is already one of the most famous ecclesiastical buildings of the world."

The lecturer, in his descriptive remarks, showed that Classic austerity and Gothic freedom found remarkable blending in what, taken as a whole and in detail, was to his mind the most imaginative architectural work of this century. Surprise power was rampant, frequently startling. Here one found traditional form and disposition powerfully protected, and then contrasts which appeared quite at home, though unpractised by Mediaevalists or Revivalists. Saints and angelic figures spring, as it were, to life out of what may be termed masonry excrescences upon main piers and elsewhere. As one has well said, "the glory of this cathedral is its scale." Each of the four transepts (two already erected), comprising few units and plenty of mass masonry, are each practically as to height and width of the dimensions of Temple Court, Collins street, at the top of Market street, Melbourne, and the intention is that these four transepts shall buttress the tower, 100 feet square at base, reaching to a height of over 330 feet. The choir window is the largest in England, measuring seventy-six feet by forty-four feet, while generally in point of area this cathedral when completed will be only surpassed by St. Peter's (Rome) and that of Seville, in Spain. His visit last year to the cathedral was a revelation since his prior visit twenty years ago.

During the course of its erection in the past twenty-four years the architect makes no secret that he has been particularly influenced by what has been published of Spanish Gothic, and in a main direction



in regard to what he conceived would be the light and shade effects. Until last year, however, he had intentionally not visited Spain, for, as he told Mr. Lucas, he preferred to arrive at his own conclusions and to develop and express his ideas in certain points in the Liverpool work before seeing the actual structures and the extent to which his conclusions agreed, or disagreed, with the reality. The cathedral is heated after the manner of the Romans, as seen in the Baths of Caracalla and Baths of Bath, from a heating chamber under the future central space. Almost the entire floor area is double, enclosing a system of shallow ducts. On every hand a visitor cannot but gladly bear highest possible testimony to the high level of the craftsmanship.

The generosity of donors is of the most princely order, the late J. H. Welsford heading the list with a bequest of £223,000. The great south porch will represent a sum of £20,000, given in memory of the Rankine family, while two other citizens each donated £20,000. The Lady Chapel, costing £25,000, was contributed by two families. The organ, the largest in the world, has had its cost borne by Mrs. Barrow in memory of her husband, which, with an endowment fund for its upkeep totals about £54,000.

The War Memorial for Liverpool and district consists of the north transept, for which the committees of that fund handed over £31,000. Freemasonry met the expense of the Chapter House. When consecrated in 1924, nearly £1,000,000 had been received, and it is estimated that the total cost of the entire structure would be about £2,000,000.

Mr. Lucas concluded by referring to the fact that Sir Giles Gilbert Scott, the architect, had again and again publicly stated: "What I want the people to feel when they enter this cathedral is the need for prayer," and he (the lecturer) felt confident all present on this 5th anniversary day of the dedication of the Choir were in unison that the architect himself may be privileged to kneel before the mighty tower of this Cathedral Church of Christ, at its completion, in thanksgiving to Almighty God.

A vote of thanks to the speaker was proposed by Mr. J. P. McCabe Doyle, who said, as president of the Council of the Gordon, he appreciated the honour in having such a lecturer. Col. Purnell said it was a double pleasure to have Mr. Lucas there last night. He was a personal friend of the lecturer, and his subject was an inspiring one. The vote of thanks to the Chairman was moved and seconded by the Rev. J. J. Booth and Mr. C. F. Seeley.

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