

Throughout the dune development, certain continuous changes have been going on apart from the diminishing mobility and increasing water-retaining capacity to which I have especially directed attention. These are the progressive leaching out of the soil carbonates and the augmentation of the acid products of organic decay, and so it is that we find that the prevailing alkaline condition of the young dune passes gradually into an acid state of the old. In the regions of higher rainfall, peat accumulation leads to the development of heather moor as on the old dunes of the Culbin Sands on the Moray Firth.

The progressive changes in the character of the dune soil with the passage of time are shown by the two series of data summarized below. These show the increasing acidity (diminishing pH value), increasing organic content, and decreasing content of calcium carbonate, in two dune systems. One (Blakeney) with an initially low carbonate content, and the other (Southport) in which the initial carbonate content is comparatively high.

Approximate age of dunes in years	SOUTHPORT DUNE SYSTEM		Reaction
	CaCO <sub>3</sub> %	Organic content %	
2	6.3	0.53	8.2
6	4.15	0.33	8.2
14	3.17	0.68	8.15
25-55	2.6	0.74	7.8
100	1.14	4.0	7.2
200-280	0.28	5.9	6.4
	BLAKENEY POINT DUNE SYSTEM		
5	0.42	0.36	7.2
80	0.34	0.5	7.0
160	0.03	0.86	6.9
235	0.01	1.15	6.4
340	0.01	2.7	6.2

Whereas the young yellow dunes only possess a flora of about ten species, the later yellow dunes can support between fifty and sixty different kinds of flowering plants, and the comparatively stable grey dunes have a flora of more than a hundred, exclusive of those confined to the 'slacks'.

The specialization imposed by the physical attributes of the habitat itself have been permanently modified; but the final occupants may themselves create specialized physical conditions which once more restrict the supportive capacity of the habitat.

## Landscape at the Royal Academy

IN considering pictures from the point of view of science, one is glad to subscribe to what appears to be Ruskin's central doctrine, which may be put thus: a creative artist in portraying natural subjects, whether figure or landscape, should base his work, except in so far as it is meant to be symbolic, on a scientific realism expressing the love of Nature, and should carefully restrict the selection of particular effects to the suppression of others where this is rendered necessary by the limitations of the medium.

There can be no question but that both scientific realism and the love of Nature are apparent in the pure landscape work which has figured so prominently in British art since the time of Constable, and that the annual exhibitions of the Royal Academy reflect this tradition. The 1938 exhibition has the usual large proportion of landscapes amid figures, portraits, historical scenes and coronation pageantry, and in this short notice attention may be directed to a few of the landscape canvases, leaving out of account the quite strong representation in water-colour.

Mr. Sydney Lee's "Lulworth Cove" (274) well suggests location in the midst of a stretch of the Dorset coast-line, as high, rugged and fierce as any in England. The rock-contortions about the cove should please geologists, but the general alignment of the cove in relation to the open sea will

certainly force attention on the laws of perspective.

Another pleasing Dorset scene is that in a small picture by Major C. E. Phillips, secretary of the Royal Institution, entitled "On the Purbeck Hills" (76). The general conformation of the land, as well as the line of stone walls in the background, would place this scene, not in the range of chalk downs that sweep round by Corfe Castle, but in the limestone ridge the upturned edge of which forms the splendid high coast between Swanage Bay and St. Aldhelm's Head.

In "Bibury Bridge" (26), Miss Kathleen M. Pearson presents a typical Cotswold scene: the delightful oolite stone, ever dominant, never out of harmony with other elements, the backing of stately elms gloriously grouped, and the foreground touch of animation given to the precincts of the village by two lads with a dog. The "Sutherland" (314) of Mr. Borlase Smart shows an inlet of the sea overlooked by mountains; but the whole power of the picture to the present writer lies in its suggestion of the wild tract of the Northern Highlands that lies behind the scene depicted. The grand simplicity of the title hints, indeed, that this is precisely the reaction the artist intends. "On the Moors, Skye" (760), by Mr. Arthur T. Nowell, is a skilful rendering of the beautiful lighting effects so typical of showery weather in the wild hills of the Western Highlands.



The background of Mr. Walter Goodin's "The River, Beverley" (429) is occupied by intensely black thunder-cloud, and the foreground, beneath brighter sky, by a great poplar obviously waving and rustling in the wind against which the storm is coming up—a most realistic example of landscape meteorology. Dazzling lightning, with the branching structure revealed in photographs, leaps across the mountains in Mr. Frederick C. Tilney's "Nothing Matters to a Machine" (571), in which a motor-car is seen speeding through a rugged defile. If it be objected that the landscape artist should paint what he sees of lightning, not what he knows about it, one can retort that some artists have extraordinary sight for lightning structure, as evidenced by Turner, in whose time photography was in its infancy.

There are various snow scenes from different parts, but that exhibited in J. McIntosh Patrick's "An Exmoor Farm" (313) is peculiarly charming by reason of the delicate contrast of the expanse of misty glaucous sea, very true to type, seen away in the distance. "The Bow in the Clouds" (192) of Victor Weingott, wherein a rainbow with secondary arc appears over a number of well-portrayed human figures, may be mentioned because it is very unusual in pictures to find the luminosity of the sky so accurately graded as between the inside of the primary, and outside of the secondary, bow.

The convolutions, rifts and gulfs in the white

surface of a magnificent chain of cumulo-nimbus cloud are rendered with some success in Mr. James Bateman's "Farm Yard" (227), but it may be questioned whether the lower mass of cloud to the right of the picture is in the correct plane. Lawn and trees in a midsummer setting of deep blue sky and small radiant cumulus clouds are given in Mr. Algernon Newton's "Wimpole Hall, Cambridgeshire" (407), and it is interesting to note the same type of study by the same artist on foreign soil in "The Villa Starhemberg, Bad-Ischl, Austria" (144). Lawn and trees are in brilliant sunlight in front of the villa, but stormy-looking clouds are beginning to rear up over the Alps behind, and very intense shadow is being cast by the mountain shoulder on the left—an impressive illustration, to be sure, of Ruskin's "mountain gloom". The fault of this telling picture is the uniform dull brown colour in which the foliage of the trees in front and the mountain slopes behind are painted.

Landscape art makes a unique contribution, not so well appreciated as it ought to be, to meteorological science, in fixing just those subtle scenic aspects of atmosphere and weather, in short, those imponderable elements in climate, that not only produce profound psychological reactions but also inevitably leave their stamp on the development of art and literature.

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## Obituary Notices

Mr. T. H. D. La Touche

WITH the death on March 30 at the age of eighty-two years of Thomas Henry Digges La Touche, the Geological Survey of India has lost its oldest member. Educated at Shrewsbury and St. John's College, Cambridge, that breeding-place of geologists, he was appointed to the Geological Survey of India in 1881, promoted superintendent in 1894 and acted as director in 1906 and 1909, retiring in 1910.

During his service of almost thirty years, La Touche acquired an exceptionally wide acquaintance with all aspects of Indian geological problems, scientific and economic. His work extended from Baluchistan in the west to the Burma-Chinese frontier in the east, and included investigations of the coal-measures of Assam, Kashmir and the Northern Shan States; the sapphires of Kashmir; oil in Baluchistan; the great silver-lead-zinc deposits of Bawdwin in conjunction with Dr. Coggin Brown; and the Lonar Lake with Dr. Christie. He also investigated the geology of western Rajputana, and his account includes a detailed petrological description of the igneous rocks of that region.

La Touche's greatest work, and the one which he

himself looked back upon with legit mate pride, was the survey of the Northern Shan States of Burma. This was undertaken during the later years of his service, and from time to time he had the assistance of other members of the Department. The results, embodied in *Memoirs, Geological Survey of India*, vol. 39, part 2, with descriptions of the fossils by various specialists in the *Palaeontologia Indica*, opened up an entirely new chapter in the geological history of Burma and embodied "many valuable discoveries bearing on the question of the extension of Asian Zoo-geographical provinces during the Palaeozoic era"

In addition to his official publications, La Touche found time to edit for the Asiatic Society of Bengal, of which he was president, the journals of Major James Rennell, the first Surveyor General. He was also a superb amateur photographer, and his ingenious adaptation of the Walker balance to the rapid determination of the specific gravity of rock specimens is well known to all his colleagues.

After his retirement, La Touche's services were not lost to India. In 1914 he published "A Bibliography of Indian Geology and Physical Geography with an Annotated Index of Minerals of Economic