

By this method the age of the oldest rocks known has been determined as 1400 million years, and it is probable that the whole age of the earth is about 1600 million years. With this extra datum we can find a . It turns out that radioactivity at a depth of 13 km. must be $1/e$ (that is, 0.37) of what it is at the surface, that at 26 km. $1/e^2$, and so on. On this basis it is found that the differences between the present temperatures at various depths and the melting points of peridotite at the same depths are as follows:

Depth (km.):	0	37	74	111	148	185	222	259	296	333	370	444	518	592
Temperature differences (degrees C.):	1400	940?	830	710	600	510	420	340	280	210	170	95	50	25

Below 600 km. or so the cooling is inappreciable. The cooling at depths of 200 to 300 km. is not so great as to forbid occasional softening of the more fusible constituents of the Femi, so that the existence of vulcanism is consistent with these estimates.

I have performed the corresponding calculations for another hypothesis differing as far as possible from that

of Holmes; namely, I supposed the radioactivity uniform down to a finite depth and zero below that depth. The effect of the change is not great: the cooling at all depths is increased by about 16 per cent.

The above calculations are based on numerical data differing somewhat from those used by Holmes, and also from those used by myself in previous work. Previously I used as the primitive surface temperature the melting point of basalt, 1200°, seeing that it was the deep-seated rocks whose initial temperatures would have the greatest influence in determining present temperatures. But L. H. Adams,² in a recent re-discussion of the whole matter, has pointed out that I did not go far enough, and adopts 1400° as his standard melting point; this datum has been used above. At the same time he has made an allowance for the difference between the conductivities of rocks at different depths. The effect is to increase the amount of radioactive material and reduce the cooling, but the general trend of the results is not violently changed.

* Jour. Wash. Acad. Sci., 1924.

The Royal Academy Exhibition.

IN a little book on "The Revolutions of Civilisation," with abundant illustrations of the arts of many ages, Sir Flinders Petrie has sketched out a sequence of rise and decline of civilisations in eight periods from the dawn of history, six of them between 6000 B.C. and A.D. 2000. It is through the arts that the sequence is manifest: the several arts keep an order of precedence, they reach in turn a maximum of development; and in turn decay. In each period sculpture is the first of the arts to reach its maximum phase, followed by pictorial arts and then in turn by literature, mechanics, and finally by wealth. So also, in each period, the first signs of decay are manifest in sculpture; the decay of pictorial arts comes next. Medieval civilisation developed its maximum phase of sculpture in the thirteenth century, of painting at the end of the fourteenth, of literature at the end of the fifteenth; we are now in the maximum phase of mechanics, and all we have in prospect before our period goes out and the ninth becomes dominant is a maximum of wealth.

Suppose a visitor properly imbued with these ideas of revolutionary civilisation should find himself among the Royal Academy pictures of 1925, with room to see, and leisure to think about, the fourteen hundred items of the exhibition, what impression would he get? What would he think of sculpture which already showed signs of decadence four centuries ago? It is represented by reliefs, as 1273, *The Late Bishop of Hereford* for his Cathedral, by Allan Wyon, recumbent statues of *Lord Kitchener* in marble (1381) for St. Paul's, W. Reid Dick, and *The Late Bishop of Coventry* in bronze for his Cathedral (1377), by Sir Hamo Thornycroft, R.A., many figures, busts and statuettes, and some really convoluted animals, *Wild Swans* (1222), *Eagle, Lynx, and Hare* (1223), by the Danish sculptor Holger Wederkinch. Is a recumbent statue the imitation of a bygone habit of centuries ago or a step in the progress of the realisation of an art which also strives to represent action, as in a bronze *Atalanta* (1414) by Sir Bertram Mackennal? After he had assigned the position of sculpture, between the failing light of the eighth period and the

dawning of the ninth (making what allowance is necessary for "copying," with which Sir Flinders Petrie declines to concern himself), what would he think when confronted with 477, *Sir Donald MacAlister of Tarbet*, as portrayed by Maurice Greiffenhagen, R.A., or 79, *A Street Accident*, by Glyn W. Philpot, R.A., or 340, *The Soul's Journey*, according to Mrs. A. L. Swynerton, A.? How would he relate them to the golden age before the cinquecento? What, anyway, could the student of civilisation have said if 160, *Man Versus Beast (Paris)*, Sir William Orpen, R.A., happened to have been unearthed from an Egyptian tomb instead of being exhibited as a novelty in a London gallery?

It is a well-arranged exhibition: the oil paintings, which number only 631, are hung within comfortable view, mostly in not more than double rows. These are supplemented by 407 water colours, miniatures, drawings, engravings or etchings in the South Rooms, 174 architectural drawings and 207 sculptures.

One gets the impression of alternations of portrait and landscape with very few historical or subject pictures, more uniformity of excellence and fewer striking exceptions than usual. There are, once more, a number of examples of brilliance of illumination by La Thangue obtained by juxtaposition of light and shade: 42, *Amalfi Vines*; 84, *A Provençal Flock*; 141, *The Thorn*; and 175, *The Trout*. There are some efforts of a similar character not nearly so successful: 305, *Jack, Jill, and Peter*, Dorothea Sharp; 407, *A March Morning*, Harry Fidler; and better than these 537, *Eucalyptus Avenue*, Mary H. Carlisle. There are also striking examples of moonlight brilliance by the juxtaposition of iridescent colours; 14, *Silver Moonlight*, and 129, *The Ebbing Tide*, Julius Olsson, R.A.

For the spectator, whose days belong to science and to whom the technique of art is a mystery, the landscapes naturally afford more food for reflection than the portraits; and the comparative uniformity easily leads to thinking about the colour schemes of Nature, as expressed by different artists. There is a whole gamut of variation between the blue middle distance and

red background of 150, *Evening Glow on Rosengarten*, by Adrian Stokes, R.A., and the colourless grey whiteness of sheep in 252, *A Blizzard*, by Joseph Farquharson, R.A.

All Adrian Stokes's pictures are indeed notable for their colour scheme; 7 and 18 present beautiful contrasts of yellow and crimson foliage with the blue vistas of distance in Italy, whereas in 229, *Green Haunts*, an English forest, green is everywhere, only relieved by patches of sunlight on a somewhat ruddy path. One can indeed classify the landscapes by their blueness, their redness, or their whiteness, and can speculate as to how far any differences are due to idiosyncrasies of colour vision or to a true appreciation of the fact that clouds of the very smallest kind of particle in the atmosphere are blue to look at, but red to look through; while clouds of larger particles are white to look at and grey to look through. So, in Italy, as already noticed, or in Spain, 570, *Among the Mountains*, Christopher Williams, where particles are very small, made perhaps of the finest dust or of wood smoke, distance is blue and setting suns are red, whereas in the Western Highlands, where particles which are not considerable water drops are scarcely to be found at all, distance is colourless and sunsets are practically white. Even in Spain, 117, *Bridge at Toledo*, Oliver Hall, A., the grey is scarcely to be called blue.

The Exhibition offers many suggestive examples of these various points of view. As white or grey pictures, 8, *Morning Light*, Clewin Harcourt; 12, *Waterloo Bridge*, November Dawn, Algernon Newton; 39, *Blythburgh from Henham*, B. Priestman, R.A.; 51, *On the Eastern Rother*, P. H. Padwick; 52, *The Bathers' Pool*, Algernon Talmage, A.; 111, *The Woodland Way*, W. W. Oules, R.A.; 169, *Evening, Trepied, Pas de Calais*, Sir H. Hughes-Stanton, R.A.; 187, *Kilchurn Castle, Loch Awe*, Sir D. Murray, R.A.; 240, *King George V. Dock*, W. L. Wyllie, R.A.

There is blue but grey blue, very true in tone, in 69, *The Farm on the Hill*, Arnesby Brown, R.A.; 275, *Himalayan Snowfield*, C. W. Bion, has grey blue; 472, *A Bule Hill Far Away*, Sir D. Murray, R.A., a very grey blue. There are blue distances in 292, *Blossom Time*, F. F. Foottet; 293, *Hoar Frost*, W. H. Adams; 631, *The Valley of Clitunno*, Freda Marston. So blue becomes more pronounced until 553, *The Blue Lake*, Sydney Lee, A., is almost incredibly blue. 110, *The Fountain of Neptune*, by the same artist, has the deepest of blue for a background; so has 130, *Miss Pearl Hood*, a portrait by Greiffenhagen. 596, *Almost Night, Venice*, Terrick Williams, A., is all blue; that must

presumably be a question of colour vision. J. C. Moody, in 92, *Into the Sun's Reflections*, colours the nearest black post blue; that must also be similarly classed if the blue of blue smoke is what physicists suppose it to be.

Red is more rare: it is the most transient of atmospheric colours except the green of the departing sun; such examples of red as there are are not very convincing.

Painters are still inappreciative of certain proprieties about clouds; some types are appropriate to early morning and others to afternoon and evening. A lapse in this respect, 159, *A Summer Morning*, George Clausen, R.A., gives the impression of restlessness that one feels before a thunderstorm, always a restless phenomenon. A similar feeling comes from the sky and lighting in 618, *The Bathers, Pas de Calais*, and other pictures. Something impels an artist to throw some sort of action into the sky, hence one finds thunderstorms "standing where they ought not." On the other hand, there is a beautiful English restfulness about 58, B. Priestman's *Lock Pool*.

Of the portraits the stark apparition of Sir Donald MacAlister has already been hinted at; an easily recognisable portrait of *Lord Rayleigh*, 211, by Melton Fisher, R.A., is not far on one side from a less easily recognisable portrait of the Master of Sempill and his wife; or, on the other side, from one of *Lady Rayleigh*, 556, by W. W. Russell, A., not quite so reposeful. *Sir Humphry Rolleston*, 260, by George Henry, R.A., comes freshly before us as the new Regius professor at Cambridge. The president of the Institution of Civil Engineers is there, 186, by Stanhope Forbes, R.A., the Deputy Master of Trinity House, 245, by R. G. Eves, and a number of portraits of doctors of various academic faculties. That brings us back to wondering where in the sequence of the revolution of civilisation clothes ought to be put. Are fine clothes or no clothes a sign of civilisation or are they not? And if they are, have we reached the zenith? Are we approaching it or have we passed beyond it to a period of decay? Neither sculpture nor painting in the Academy will give a conclusive answer in the year 1925, though both may give cause for thought about it. Without doubt, if they are not mere echoes of a loftier age and are, indeed, real flowers of the artistic genius of the twentieth century, 139, by Sir William Orpen, R.A., and 102, by Sir Arthur Cope, R.A., and not a few others, will suggest to anthropologists that the sartorial art of the eighth period must be at least very near its climax, for even Solomon in all his glory was not arrayed like some of these.

The University Celebrations at Pavia.

(FROM A CORRESPONDENT.)

WHEN is a university not a university? That is the riddle set to the philosophic historian by the spirited claim of Pavia to be the oldest university of Europe. The answer mostly given is *not* before the twelfth century, if it was then when the name *Universitas*, i.e. of students from different nations and of different subjects, began to displace the older term of *Studium Generale*, which lingered on in Italy for many centuries. But the distinguished writers on medieval law and history who have made Pavia well

known in recent years, especially the present Rector, Prof. Arrigo Solmi, seem to be justified in maintaining that when a summons is issued by a great monarch, the greatest of his day, to a number of towns in a wide area, to centralise their efforts in all studies beyond school-level in a single spot under the direction of one eminent teacher and his colleagues, whom the said monarch has expressly invited and established, it becomes a question of name rather than fact whether we call the result a university or no.