freely move about, whereas when it is cold and rigid such freedom of movement is impossible; in consequence the definite formation of crystals cannot take place, and the result of the change is different. What happens is this. In the first place, molecules of the same kind tend to separate out from the homogeneous mixture and collect round a point, forming a centre of decomposition. Proceeding from this centre the glass is found decomposing into definite compounds in an ever-enlarging circle until it reaches a point at which the strain set up in the glass by this molecular movement results in a crack forming round the area of decomposition, and then the whole mass comes away, leaving behind it a little hole or pit in the surface of the glass.

Such are the two forces at work on the decay of glass—corrosion without and decomposition within—and, of course, they act simultaneously. As the pits are formed they are extended by corrosion, forming a resting place, in fact, for the water, until eventually the whole fabric of the glass is destroyed.

According to varying circumstances—the position of the window as affecting its degree of exposure, the climate in which it is placed, differences in composition and mechanical state of the glass—we get all sorts of variations in the precise effect of decay in particular instances.

It is a well recognised fact that glass containing a large proportion of earths, that is, lime, magnesia, and alumina, is especially liable to become crystalline. If, then, one is correct in thinking that the peculiar pitting of Gothic glass is due to a similar change of constitution, one would expect to find it excessively rich in these constituents, and we have already seen that this is, in fact, the case.

On the other hand, glass containing excess of alkali has an equally recognised tendency to go "blind," that is, to become covered with a film, due to corrosion. Finally, glass with a high content of silica, with earth and alkali equally balanced, may be looked upon as highly resistant in both directions. It is such glasses which decay slowly and with little tendency to devitrification, the surface being merely etched by corrosion, leaving the large proportion of silica in a coherent thin film, producing gorgeous effects of iridescence.

Besides the glass itself, a study of the materials used for producing the enamel with which the glass was painted to represent figures and subjects is a matter of some importance, which is fully discussed in the paper. After going thoroughly into the evidence afforded by those mediæval pay-rolls which have been preserved, dealing with the execution of stained-glass windows, the author comes to the conclusion that the enamel in question was prepared by making a fusible opaque black glass, technically known as "geet," probably because it resembled jet in appearance (the word jet being in writings of the period variously spelt jeat, ieat, geat, geet); this material would be used as a flux, and mixed with the oxides of iron and copper to make the paint. Experiment shows that an enamel prepared in this way is in every respect similar to that used in the finest examples of mediæval stained glass.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

AN exhibition illustrating a course of lectures on Japanese education given under the auspices of the University of London by Baron Kikuchi, will be opened on Tuesday next at the Victoria and Albert Museum (Indian Section), South Kensington. The exhibition will remain open until the end of June.

RECENT statistics published by the French Minister of Public Instruction give the number of students attending courses of instruction in French universities and higher educational institutions. The total reaches 38,197, of whom 3434 are foreigners—a number much larger than usual owing to the temporary closing of certain Russian universities. Of the native students, 1364 are women. The number of students at some of the larger universities are as follows:—Paris, 15,789; Lyons, 2783; Toulouse, 2675; Bordeaux, 2496; Nancy, 1841; Montpellier, 1752; Lille, 1560; Rennes, 1498; and Aix-Marseilles, 1269. The Paris students are distributed among the different faculties and schools as follows:—law, 7032; medicine, 3369; letters, 2413; science, 2022; and pharmacy, 953. The total number of French university men students include in the various departments of learning:—law, 15,427; medicine, 7501; letters, 4605; science, 5881; and pharmacy, 2224.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 15, 1906.—"On the Effect of High Temperatures on Radium Emanation and its Products." By Walter **Makower** and Sidney **Russ**. Communicated by Prof. A. Schuster, F.R.S.

In a previous paper it was shown that the activity of radium emanation sealed in a quartz tube is temporarily changed by subjecting it for a short time to temperatures between 1000° C. and 1200° C. From the results obtained it seemed probable that this change was not due to any alteration of the emanation itself, but rather to a change of activity of one of the more quickly decaying products of the emanation with which it is in equilibrium. To settle this point measurements were made of the rate of decay of the emanation when kept at 1100° C. Subsequently experiments were made on the effect of high temperatures on the active deposit collected on a platinum wire by exposure to the emanation.

The results obtained were:—

(1) The change in activity noticed when radium emanation is subjected to a high temperature is not due to any alteration in the emanation itself, since its time period is unaltered when it is maintained at a temperature of 1100° C.

(2) The change is due *either* to a change in radium B *or* C, since the activity of a mixture of these two substances can be changed by heating.

(3) The change is *probably* due to some influence of temperature on radium C. This conclusion is in agreement with the statement made by Curie and Danne.

In a note the authors discuss some recent observations made by Dr. Bronson which appear at first sight difficult to reconcile with the above conclusions. As a result of his experiments, Dr. Bronson concludes that there is no change of activity in radium even when exposed to temperatures of 1600° C.

It is, however, pointed out by the authors that there are several important differences between Dr. Bronson's experiments and their own, the most important of which is that Dr. Bronson measured the activity of the radium while hot, whereas they always allowed the active deposit to cool before making measurements. It is on this account that the authors consider that the results of Dr. Bronson and their own are not necessarily contradictory.

Zoological Society, April 9.—Dr. Henry Woodward, F.R.S., vice-president, in the chair.—A collection of fishes made in the eastern watershed of the Transvaal by Captain G. E. Bruce, and presented to the British Museum: G. A. **Boulenger**. The collection contained specimens of eighteen species, of which several had not been previously recorded from the Transvaal, and five were new.—The osteology of the oligomyodian and diacromyodian Passeres: W. P. **Pycraft**. After referring to his previous contribution (published in the Proceedings) on the osteology of the eurylæmid and tracheophone Passeres, the author remarked that there seemed little room for doubt but that the diacromyodian and oligomyodian Passeres must be regarded as divergent branches of a common stem. The latter suborder included the Tyranniformes, Phytotomidæ, and Pittidæ, while the former embraced the remaining Passeres. In the present communication some fourteen families were described, and these were divided into four groups, Hirundines, Muscicapæ, Laniinæ, and Gymnorhinæ. This arrangement was based, not on osteological characters alone, but also on the evidence of pterylosis and certain wing-muscles. The author proposed to include the Vireonidæ with the Muscicapæ, and the Vireolaniidæ with the Gymnorhinæ. With this last group he proposed, tentatively at any rate, to include the Paradiseidæ,