

Now had a grove of *Sequoias*, however small, survived anywhere in Europe or Asia, and had we no knowledge of the fossil forms, we might have been quite at a loss to account for their peculiar distribution. The fossil remains of the Tertiary rocks, both animal and vegetable, present us with many instances of this kind.

The discussion of the distribution of animals and plants, when carried on in the light of geology, raises many interesting questions as to time, which we have already glanced at, but which deserve a little more attention. As to the vast duration of geological time all geologists are agreed. It is, however, now well understood that science sets certain limits to the time at our disposal. Edward Forbes humorously defined a geologist to be "an amiable enthusiast who is content if allowed to appropriate as much as he pleases of that which other men value least, namely, past time"; but now even the geologist is obliged to be content with a limited quantity of this commodity.

The well-known estimate of Lord Kelvin gave one hundred millions of years as the probable time necessary for the change of the earth from the condition of a molten mass to that which we now see. On this estimate we might fairly have assumed fifty millions of years as covering the time from the Laurentian age to the modern period. The great physicist has, however, after allowing us thus much credit in the bank of time, "suddenly put up the shutters and declared a dividend of less than four shillings in the pound."¹ In other words, he has reduced the time at our disposal to twenty millions of years. Other physicists, reasoning on the constitution of the sun, agree with this latter estimate, and affirm that "twenty millions of years ago the earth was enveloped in the fiery atmosphere of the sun."² Geology itself has attempted an independent cal-

¹ Bonney, Address before British Association, 1888.

² Newcomb, Helmholtz, Tait, etc.