

that its progress must be very slow, and that the time during which these 2,200 feet of sediments were laid down can be expressed only in terms of thousands of centuries. Since the uppermost of the sediments are of recent formation, it is evident that the column, as represented in the well, must extend into the glacial period, and probably include at least the last of the glacial epochs. We should therefore expect to find, in the character of the sediments, variations recording phases of the glacial period. The record of the boring shows uniformly brown loam with occasional layers of sand or of gravel, more rarely of cobbles, all of which are distinctly delta-oasis formations. An examination of the record on fig. 21 shows at once a great difference in the distribution of the coarser layers. Below 750 feet the layers of gravel range from 150 to 200 feet apart, and the lower 500 feet of the well has only a solitary and thin layer of any kind in the loam. On the other hand, between 500 and 750 feet, the coarse layers, and here largely cobble, recur with short intervals. And the percentage of coarse material, including sand, between 500 and 900 feet, is several times as great as in the rest of the column. This would seem to indicate a period when the stream had exceptionally great transporting power. Since there can be no doubt that at least the last ice-epoch of the glacial period was contemporaneous with some part of this column, it would seem more probable that the conditions that caused the rapid recurrence of coarse beds are assignable to climatic rather than to orogenic causes. Looking at the column from this point of view, we might see the climax of the ice-epoch in the part between 600 and 800 feet. Without attempting to analyze closely the significance of all the details of the column, it may be worth while to carry this tentative speculation farther, and determine approximately the age of this part of the record. Since the beds coarser than loam clearly represent alluviation, they are evidence that the column has grown *pari passu* with the sinking of the zone of depression. The maximum rate of growth would be that of the maximum of alluviation on the sinking zone, and this rate is very nearly represented by that of the growth of irrigation sediments where practically all of the silts are held up artificially. For this we may take the rate of 1 foot per century determined on the neighboring Anau delta. Applying this rate, the space between 500 and 900 feet would cover the period between 50,000 and 90,000 years ago; and the mean point at 700 feet would be 70,000 years ago.