# AN ATTEMPT TO CORRECT FOR THE EFFECTS OF THE FLOOD IN DETERMINING DATES BY RADIOACTIVE CARBON

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This work grew out of some thought about the suggestion in *The Genesis Flood* that, at the time of the flood, the action of cosmic rays, or similar pentrating radiation, may have caused the great reduction in lifetimes which came then, and also the building up of the amount of radioactive carbon in the air.[1,2] Such increase of radioactive carbon would affect, in turn, attempts to determine dates of organic remains by measuring the amount of radioactive carbon in them.

Now we have no record of the way in which the amount of radioactive carbon built up, but we have in Genesis Ch. 11 a record of the way in which the lifetimes decreased. So perhaps from the one set of information we can deduce something about the other matter.

First of all, there appears to be practically no radioactive carbon in coal. So, if we accept that much of the coal comes from vegetation which was buried at the time of the flood, and that the time back to the flood is not much more than the half life of radioactive carbon (for which, for the present purposes, the round figure of 5,500 years will do), it must follow that there was practically no radioactive carbon in the atmosphere before the flood, I have suggested, elsewhere ( See legend to Figure 2), a chronology to show that the date of the flood was approximately 2444 B.C.

During the flood, then, and after, radioactive carbon accumulated in the atmosphere, and defects of some kind accumulated in the human race. The result of the latter accumulation was a decrease in lifetime. If both these things were caused by cosmic rays, which first got through to the earth at the time of the flood, we might expect some relation between these two things, such as has just been proposed.

It seems likely that most of the decrease in lifetime would come from what happened in a man's earlier years. On the other hand, Shem was already one hundred at the time of the flood, yet his lifetime was reduced to six hundred years, from the approximately nine hundred and fifty common before the flood. As a reasonable working assumption, let us take it that a man's vulnerability, so to speak, extended up to the age at which he is first recorded as having begotten a son.

In Table 1 are listed the patriarchs, and some other men, with the dates (the flood being taken at 2444 B.C.), at which they first begat, and the lengths of their lives. In Figure 1 are plotted the lifetimes vs. the date of maturity B.C. (i.e., of first begetting) and a smooth curve has been drawn through the points. Naturally, the points will scatter around the curve, for "time and chance happeneth to them all" (Ecclesiastes 9, 11). The curve might be called that of average lifetime vs. date of maturity.

Now let us assume as already suggested that the rate of change or increase of the concentration of radioactive carbon is proportional to the rate of change or decrease of average lifetime. This seems plausible if both changes are due to the same cause. Then, when the lifetime has settled down to its steady magnitude of seventy years, about 1000 B. C., the concentration of radioactive carbon will have settled down to its present "steady" magnitude.

Moreover, at any date, the amount of radioactive carbon will be to the present amount as the amount by which the average lifetime had decreased from nine hundred and fifty years is to the total decrease, i.e. from nine hundred and fifty to seventy or eight hundred and eighty years. For instance, at a date when the average lifetime was five hundred and ten years, the amount of radioactive carbon was just half what it is now.

Actually, there should be some averaging of the amount of radioactive carbon over all the time in which the sample concerned was growing. But, then, there ought to be some averaging over the time in which the man concerned was growing. Since these two effects should be somewhat parallel, relating lifetime to concentration of radioactive carbon at the time of maturity should be reasonable.

The amount of radioactive carbon in a sample at any subsequent time is given by $\exp(-T/8000)$ times the amount with which it started, T being the time in years. (The number 8000 is given by $5500/\log_e 2$). If the sample started out with only $1/x$ the supposed concentration, one assuming that it started with the supposed (i.e., present) concentration, would take the age as the true age plus the time for the concentration to decay to $1/x$, i.e., plus $8000 \log_e x$ years.

The concentrations as various dates, from 1000 B. C. back to 2440 B. C., have been taken from the graph in Figure 1, as suggested, the fraction $1/x$ of the present concentration calculated, and $8000 \log_e x$ years added to the (true) date to give the indicated date, i.e. indicated by the

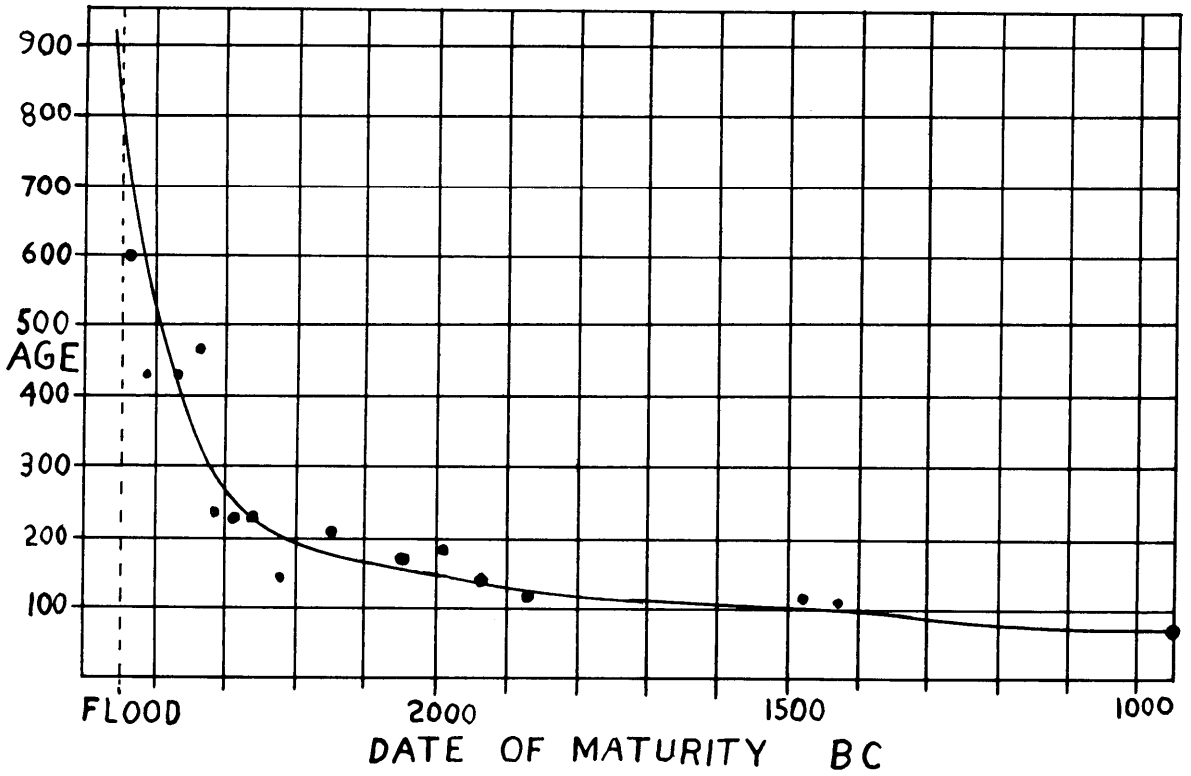


**Figure 1.** Here the age to which patriarchs and others lived has been plotted vs. their date of maturity, i.e., of first recorded begetting, and a smooth curve drawn through the points. The chronology is one which has been worked out for this purpose, but the substitution of a similar one, e.g., Ussher's, would not affect things appreciably.

method of radioactive carbon. In Figure 2 are plotted true date vs. indicated date. The graph goes back from 1000 B. C.; for more recent dates the indicated age will be very nearly correct.

It can be seen that a sample from about 2100 B. C. would be dated as fully one thousand years too old, and for older samples the error would increase rapidly. It is interesting to notice that samples seem to keep on being found which give by radioactive carbon dates around 2500 B.C. to 3000 B.C. but which are dated by other evidence as nearly one thousand years later.[3]

For samples from between about 2400 B.C. and the flood, the dating by radioactive carbon would be very unreliable, and for antediluvian samples it would, of course, be quite impossible. However, let us consider a little more closely what antediluvian samples might show.

Those which were buried quite deeply, such as the stuff which became coal, would probably show practically no radioactivity, But samples buried shallowly, or disturbed from time to time, might quite likely later pick up some small amount of radioactive carbon from the surroundings.

**TABLE 1**

| Name | Date of first begetting | Lived to age |
|---|---|---|
| Shem | 2442 | 600 |
| Arphaxed | 2407 | 438 |
| Salah | 2377 | 433 |
| Eber | 2343 | 464 |
| Peleg | 2313 | 239 |
| Reu | 2281 | 239 |
| Serug | 2251 | 230 |
| Nahor | 2222 | 148 |
| Terah | 2152 | 205 |
| Abraham | 2052 | 175 |
| Isaac | 1992 | 180 |
| Jacob | 1932(?) | 147 |
| Joseph | 1869(?) | 110 |
| Moses | 1470(?) | 120 |
| Joshua | 1420(?) | 110 |
| Solomon | 950(?) | 70(?) |

**Table 1.** Here the date of maturity, i.e., of the first recorded begetting, and the age to which they lived, are collected for patriarchs and some others. The dates are from a chronology which has been worked out for this purpose; the substitution, however, of another one such as Ussher's would not change things seriously.

**Figure 2**

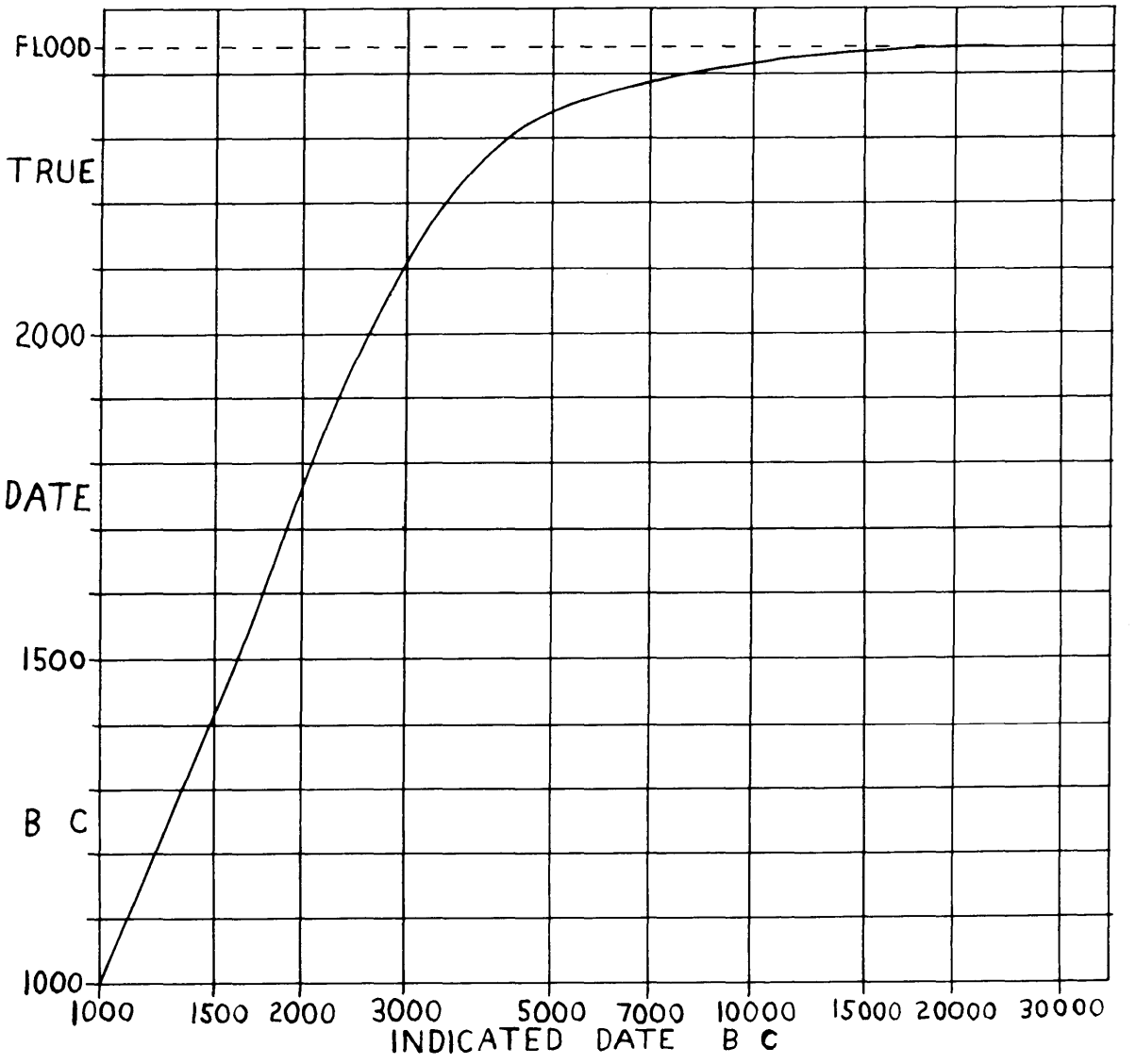


**Figure 2.** This shows the truedate vs. date indicated by dating with radioactive carbon on the usual assumption that the sample started off with the same concentration of radioactive carbon that it would have if it started now. The chronology used puts the flood at 2444 B.C., but another date near that, such as Ussher's 2349 B.C., would merely shift the curve bodily up or down a bit. Note that the scale of indicated dates is logarithmic.

Thus these would indicate some quite large age, and the indicated ages, like the history of the remains, would be exceedingly varied. It may well be such antediluvian remains which are found from time to time and indicate ages of some tens of thousands of years.

It must be granted that the assumption that average lifetimes and concentration of radioactive carbon are related in the way proposed is indeed an assumption. Moreover, the curve of average lifetime can not be fitted with very great precision because the points scatter so. Nevertheless, this method seems to offer some hope of estimating the amount of error involved in trying to date samples by radioactive carbon.

### References

1. J. C. Whitcomb and H. M. Morris, *The Genesis Flood.* The Presbyterian and Reformed Publishing Company, Philadelphia, 1961, pp. 374 et seq.
2. *Op. cit.* pp. 23 et. seq. and pp. 404 et seq.
3. See *The Genesis Flood*, p. 43, for comments and further references.