company books as being worth less and less as they age. Most manufacturers, on the other hand, recognize obsolescence and attempt to take care of that factor merely by increasing the rate of depreciation write-off. Finally, there are a few who would separate the two and undertake wholly different methods of caring for them. But these few are deterred from making such a separation because the Federal Government in its income tax regulations provides that any provision made for obsolescence must be through the depreciation provision.[1]

There is a strong indication, however, that in times of rapid mechanical progress, obsolescence rather than deterioration is the governing factor affecting the value of productive equipment, and that in a large number of cases its value disappears because of improvement or invention long before age or wear have had an opportunity really to lessen its efficiency and therefore its value as an agency in production.

Obsolescence, however, is governed by entirely different forces from deterioration. It is not certain in its action and its incidence in any given case cannot be foretold as can the depreciation of wear and age. It is well known that invention and progress are not at all regular movements. They come in spurts, first in one field and then in another. Recently concrete has become the modern form of construction and steel buildings are out of date. Suddenly the buildings of the last thirty years have become obsolete. All buildings of the familiar type of construction whether old or young have lost much of their value because prospective lessees demand "modern construction." The older buildings are out of fashion.

The new type of concrete structures will last for many decades unless they are torn down to make way for some still newer type as yet unknown. That newer type may come soon or it may be years away, but, whenever it does come, the expense of removing the present structures will be very much greater than the expense of removing the type that has just become obsolete. That is a point for builders to think about seriously in their choice of types of construction.

There is one characteristic of obsolescence that everyone will recognize. Whereas the principal characteristic of both age and wear is that they progress fairly steadily with time, the principal one of obsolescence is the uncertainty of its action both in time and in extent. The high wheeled cycle may become entirely obsolete in twelve months as it is replaced by the modern bicycle, while the latter experiences only partial and temporary obsolescence with the advent of the automobile.

In one textile mill, however, where automatic looms had not been installed it was learned that the reason why no change had been made was that the unit costs of making cloth on the new expensive machines would be greater than the actual book costs obtained by the company's cost department. Investigation turned up the interesting fact that the value of the old looms had been reduced on the books, at conservative depreciation rates, until the entire equipment stood practically at scrap value. Using such values in making up the cost figures naturally resulted in unnaturally low unit costs. Cloth was produced, as it were, without equipment. Of course it was difficult to show that new costly equipment, however efficient, labor saving, and lessening to the true costs, could produce cloth at lower apparent costs than no equipment at all. The figures were fooling not only the accountants but the management.

Furthermore, if the depreciation methods of current accounting practice were correct, then the results of deductions from original costs by depreciation write-offs should, of course, yield figures which approximate the true facts. On that basis machines should have reached the point physically where they should be replaced, on the average, when the write-offs reach their bottom points. But the spinning equipment of the textile mills, for instance, has not been improved since our mills were first erected by any really far reaching inventions which have made the original types out-of-date. Depreciation charges on spinning equipment, nevertheless, have been carried to a minimum in most New England mills, and yet most well-kept mills show increased rather than decreased production efficiency from their spindles because of the very smoothness which wear has imparted. Depreciation has been deducted not because of wear or age, but because men have attempted to forestall an obsolescence which has not yet arrived. In other words, depreciation in current accounting practice is not telling the truth.

[1] See Regulations 45, 62 and 65.

Of course, there is wear and tear. Buildings, especially the old wooden ones, wear out after a time. Machinery not used or cared for will rust. The factor of deterioration certainly should not be ignored. But are we not justified in questioning its use as the governing factor, as accountants have been using it, in revising their book values of equipment? Is it not instead, in many instances, a secondary factor operating slowly and quite separately from the major factor of obsolescence?

Obsolescence has no relation to time or use. It is a measure of progress and invention. It has its closest relationship to the thought of men. The more men turn their thoughts to particular methods of production the more inventions occur and the sooner the machines in use become obsolete. Obsolescence may be said to be the positive factor; depreciation, the negative. Perhaps, since depreciation often has been compared with the aging of people and its accounting theory compared with theories of pensions, we may similarly compare the phenomenon of obsolescence with life and death, and, following the analogy, we may find that accounting theory, properly to care for it, may resemble life insurance.

Death overtakes two-thirds of us before superannuation; obsolescence overtakes certainly a large percentage of our productive equipment before it wears out. Depreciation and superannuation both will occur at fairly predictable times, provided, of course, that those dates are reached. Obsolescence and death, on the contrary, occur sooner or later inevitably, but in their cases, time is the factor of uncertainty. The actuarial theories of pensions and of life insurance are founded on quite different mathematical laws. Likewise depreciation and obsolescence.

The impossibility of accurately protecting a company's property values against obsolescence by increasing depreciation rates to include this hazard should be obvious to anyone who stops to consider the irregularity of action of obsolescence. Such a plan merely throws the depreciation factor out of relation to the facts of deterioration on the individual machine or building, without adequately taking care of the obsolescence factor. The spinning frames, previously referred to, may not yet have depreciated at all but there may come a time when there will be invented a better way to spin yarn. When that time comes, the comparison which the cost figures should show, would be that of production on *undepreciated* spinning frames of the old type against production on the new invention. The comparison would be a true one and the decision indicated by it a correct one.

But what can we do, then, to protect ourselves in advance from the hazard of obsolescence? Common practice is to charge off depreciation on each item of plant and equipment and to use as the book value of our plants the total original value of all equipment items, with total depreciation deducted. Occasionally we set up cash reserve funds for depreciation just as we accumulate funds for our own or our employes' old age. In both instances the time when the fund will be called into use for a given individual, if it is called at all, can be foretold with a fair degree of accuracy.

The only uncertainty in both cases is whether or not death on the one hand or obsolescence on the other will have intervened in the meanwhile. In other words, while old age and depreciation can and should be taken care of on some annuity basis, the hazards of death and obsolescence must be financed on an assurance basis which takes into account the uncertainty and variability as to time, and yet the inevitable certainty as to final fact which is characteristic of both these risks.

Death and obsolescence cannot be financed on individual cases. Only by grouping many cases can an average rate be attained, and that average is true only for the group but not for the individual members. No one can tell when the invention will be made which will render the machine obsolete and destroy its value. Until that time it is as valuable as it ever was. No one would suggest marking down the value of a building year by year because of the possibility of its destruction by fire. If an accountant did that anyone would say that he was misrepresenting the facts. It is just as true that the book value of a machine, reduced because of the risk of obsolescence, is not correct and should not be used in comparing its performance with that of a new machine.

But by grouping many buildings a fair average rate of destruction by fire can be found. Similarly an over-all obsolescence rate on all the machines in a factory, over a series of years, may quite closely approximate the truth. The rate, in the form of a percentage of the total equipment value,