For all elements where $\frac{\alpha^2}{n^2}Z^2$ is small, formula (1) reduces to

$$E_{kin} = \frac{c^2 m_0}{2} \frac{\alpha^2}{n^2} Z^2 \quad (2)$$

The electron revolving in the first Bohr circle of the hydrogen atom will have a kinetic energy of

$$E_{kin} = 2.1 \times 10^{-11} \text{ ergs} \quad (3)$$

Since there are 6×10^{23} hydrogen atoms per gram of the substance, the total energy which would be released by pressure decomposition is

$$E_{kin} = 1.26 \times 10^{13} \text{ ergs/gm} = 3.0 \times 10^{5} \text{ cal/gm} \quad (4)$$

Since the sun radiates approximately 1.5 calories per gram per year, the new source of energy, for a sun composed entirely of hydrogen, could be relied upon to keep the sun going for a period of only 2×10^5 years.

This figure will be increased when atoms of higher atomic weight are considered. To evaluate the other extreme, consider uranium, with its ninety-two orbital electrons. Summing the kinetic energies for the respective rings, taking Z, in each case, equal to the effective atomic number, we obtain an approximation to the total energy of all the electrons in the atom. The computed value is 1.4×10^{-6} ergs per atom, or

$$E_{kin} = 3.5 \times 10^{15} \text{ ergs/gm} = 8.5 \times 10^{7} \text{ cal/gm} \quad (5)$$

The foregoing computations show that the contribution of complete pressure decomposition to the life of the sun is less than 6×10^7 years. The accepted age of the earth is of the order of 10^9 years, hence this theory, as well as any other which fails to furnish energy for at least that length of time, must be discarded as inadequate though, of course, a small fraction of the solar radiation may be attributed to that source.

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"COMMENSALISM" OF A SEA ANEMONE AND A SEA URCHIN[1]

DURING the summer of 1926, while collecting along the south shore of Cienfuegos Bay, Cuba, I encountered an interesting example of commensalism which has hitherto escaped notice. This was the presence of the sea anemone, *Aiptasia tagetes* D. and M. on the aboral surface of the test of the sea urchin *Diadema*. The pedal disc of the sea anemone was about 8 mm from the anal opening of the sea urchin. When observed in the living state the tentacles nearest the anus were being moved over the anal opening and presumably any excreta could thereby easily be transferred to the mouth of the actinian.

[1] Contribution No. 4 from the Harvard Biological Station, Atkins Foundation, Soledad, Cienfuegos, Cuba.

While both forms are very common here—the sea anemone encrusting rocks at or just above low water mark, and the sea urchin plentiful in shallow water—only two pairs were found in this relationship and these within eight meters of each other. The sea anemones were of the same size, 28 mm in height and 15 mm in diameter. The sea urchins were not full grown—the test of one measured 52 mm in diameter, while the second measured 44 mm. The distance of the actinian from the anus was the same in each case.

The advantage which the actinian derives from this association is clear—a constant food supply during the life of the sea urchin. The sea urchin, on the other hand, may be regarded as a passive host deriving no advantage and suffering no disadvantage. The initial contact of the planula with the sea urchin and its attachment was undoubtedly fortuitous.

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PRESERVATION OF NATURAL AREAS

IN addition to the preservation of suitable areas of virgin forest from the standpoint of saving the trees themselves in their natural growing conditions, as pointed out by Dr. Van Name,[1] the preservation of examples of virgin forest soil, including litter and humus, would seem to be an equally important object. The soil is the foundation of forest growth just as it is of other vegetation; if trees of the type found in virgin forests can not be replaced in some cases for several centuries, what of virgin forest soils? As Dr. Van Name mentions, removal of dead trees for firewood and picnicking of tourists do not meet the requirements for preserving natural conditions. All litter and dead timber should be left untouched, and no disturbance (such as pushing over old stumps) should be permitted; nothing should be taken away, and nothing added.

In forestry, as in other fields, we have been wont to turn to Europe for examples, good or bad. The unfortunate result of the lack of preservation of virgin areas in central Europe was illustrated recently when Professor Hesselman, of the Swedish Forest Experiment Station, wished to study humus-types in virgin forests for comparison in connection with his extensive investigation of humus in coniferous forests.[2] Aside from some inaccessible parts of

[1] SCIENCE, n.s. 65: 173, No. 1677, 1927.

[2] Hesselman, Henrik. "Studier över barrskogens humustäcke, dess egenskaper och beroende av skogsvården." (Studies of the humus cover in coniferous forest, its characteristics, and dependence on forest conservation). Meddelanden från Statens Skogsförsöksanstalt 22: 169–552, 1925.