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[要約]

絶えず変化する万物と人の知覚の限界万物は絶え間ない変化の状態にある。星々は常に動いており、成長し、冷え、爆発している。地球そのものも不変ではない。山はすり減り、川は向きを変え、谷は深くなっている。生命もまたすべて、誕生、成長、衰微、そして死を通じた、変化の過程である。今ではわかっているように、我々がかつて「不活性物質」と呼んでいたもの—いすやテーブルや石も不活性というわけではない。我々の感覚は不十分であるけれども、機器の力を借りれば、それらは我々に多くのことを伝えてくれる。顕微鏡を用いて微生物を発見したことにより、我々はバクテリアを制御する手段を手に入れることができた。我々は電波を見たり聞いたり感じたりすることはできないが、有用な目的のためにそれらを作り出したり変形させたりすることができる。工学、化学、医学において、我々が外的世界を征服したことのほとんどは、我々の神経系の能力を増大させるための、ある種の機械的装置を使用したおかげである。現代の生活においては、自力の感覚だけでは、世の中で活動するには少しも十分とはいえない。知覚を機械によって助けてもらわなければ、我々は制限速度を守ることも、ガス代や電気代の請求書の計算をすることさえもできないのである。



[本文] **392**WORDS

RTO 3min /ROL 4min

The universe is in a perpetual state of change. The stars are in constant motion, growing, cooling, exploding. The earth itself is not unchanging; mountains are being worn away, rivers are altering their channels, valleys are deepening. All life is also a
5 process of change, through birth, growth, decay, and death. Even what we used to call “inert matter” — chairs and tables and stones — is not inert, as we now know, for, at the submicroscopic level, they are whirls of electrons and protons. If a table looks today very much as it did yesterday or as it did a hundred years ago, it is not
10 because it has not changed, but because the changes have been too minute for our coarse perceptions.

To modern science, there is no “solid matter.” If matter looks “solid” to us, it does so only because its motion is too rapid or too minute to be felt. It is solid only in the sense that a rapidly rotating
15 color chart is “white” or a rapidly spinning top is “standing still.” Our senses are extremely limited, so that we constantly have to use instruments such as microscopes, telescopes and speedometers to detect and record occurrences that our senses are not able to record directly. The way in which we happen to see and feel things
20 is the result of the peculiarities of our nervous system. There are “sights” we cannot see, and, as even children know today with their high-frequency dog whistles, “sounds” that we cannot hear. It is absurd, therefore, to imagine that we ever perceive anything “as it really is.”

25 Inadequate as our senses are, with the help of instruments

they tell us a great deal. The discovery of microorganisms with the use of the microscope has given us a measure of control over bacteria; we cannot see, hear, or feel radio waves, but we can create and transform them to useful purpose. Most of our conquest of the
30 external world, in engineering, in chemistry, and in medicine, is due to our use of mechanical contrivances of one kind or another to increase the capacity of our nervous systems. In modern life, our unaided senses are not half enough to get us about in the world. We cannot even obey speed laws or compute our gas and electric
35 bills without mechanical aids to perception.