elements which Chrysippus stated as a simple proposition of physics. Heraclitus offers no analogy to the doctrine of four (not three) elements as different grades of tension; to the conception of fire and air as the “ form,” in Aristotelian terminology, of particulars; nor to the function of organizing fire which works by methodic plan to produce and preserve the world *(πυp τεχνικόν* *ὁδω* *βaδίζov ἐπὶ yέvεσιv κόσμον).* Nor, again, is there any analogy to the peculiar Stoic doctrine of universal intermingling (*κρασις* *δὶ* *ὅλoυ*). The two active elements interpenetrate the two lower or more relaxed, winding through all parts of matter and so pervading the greater masses that there is no mechanical mixture, nor γet a chemical combination, since both “ force ” and “ matter ” retain their relative characters as before. Even the distinction between “ force ” and “ matter ”—so alien to the spirit of Heraclitus—is seen to be a necessary consequence. Once assume that every character and property of a particular thing is determined solely by the tension in it of a current of Pneuma, and (since that which causes currents in the thing cannot be absolutely the same with the thing itself) Pneuma, though present in all things, must be asserted to vary indefinitely in quantity and intensity. So condensed and coarsened is the indwelling air-current of inorganic bodies that no trace of elasticity or life remains; it cannot even afford them the power of motion; all it can do is to hold them, together (*συvεκτκη* *δύvaμις),* and, in technical language, Pneuma is present in stone or metal as a retaining principle (*ἕξις*=hold), explaining the attributes of continuity and numerical identity *(συvεχη κaὶ ήνωμενα)* which even these natural substances possess. In plants again and all the vegetable kingdom it is manifest as something far purer and possessing greater tension, called a “nature,” or principle of growth (*φυοις*). Further, a distinction was drawn between irrational animals, or the brute creation, and the rational, *i.e.* gods and men, leaving room for a divergence, or rather development, of Stoic opinion. The older authorities conceded a vital principle, but denied a soul, to the brutes: animals, they say, are *ζωα* but not *εμψυχa.* Later on much evidence goes to show that (by a divergence from the orthodox standard perhaps due to Platonic influence) it was a Stoic tenet to concede a soul, though not a rational soul, throughout the animal kingdom. To this higher manifestation of Pneuma can be traced back the “ esprits animaux ” of Descartes and Leibnitz, which continue to play so great a part even in Locke. The universal presence of Pneuma was confirmed by observation. A certain warmth, akin to the vital heat of organic being, seems to be found in inorganic nature: vapours from the earth, hot springs, sparks from the flint, were claimed as the last remnant of Pneuma not yet utterly slackened and cold. They appealed also to the velocity and dilata­tion of aeriform bodies, to whirlwinds and inflated balloons. The Logos is quick and powerful, and sharper than any two-edged sword, piercing even to the dividing asunder of the joints and marrow. Tension itself Cleanthes defined as a fiery stroke (*πληγή* *πυpoς*) ; in his hymn to Zeus lightning is the symbol of divine activity. Take the fundamental properties of body—extension and resistance. The former results from distance; but distances, or dimensions, are straight lines, *i.e.* lines of greatest tension (*εἰς* *aκpov τεταμένη).* Tension produces dilatation, or increase in distance. Resistance, again, is explained by cohesion, which implies binding force. Again, the primary substance has rectilinear motion in two directions, back­wards and forwards, at once a condensation, which produces cohesion and substance, and a dilatation, the cause of extension and qualities. How near this comes to the scientific truth of attraction and repul­sion need hardly be noted. From the astronomers the Stoics borrowed their picture of the universe—a *plenum* in the form of a series of layers or concentric rings, first the elements, then the planetary and stellar spheres, massed round the earth as centre—a picture which dominated the imagination of men from the days of

Eudoxus down to those of Dante or even Copernicus. As to the physical constitution of bodies, they were content to reproduce the 'eripatetic doctrine with slight modifications in detail, of hardly any importance when compared with the change of spirit in the doctrine taught. But they rarely prosecuted researches in physics or astronomy, and the newly created sciences of biology and compara­tive anatomy received no adequate recognition from them.

If, however, in the science of nature the Stoics can lay claim to no striking originality, the case is different when we come to the science of man. In the rational creatures— man and the gods—Pneuma is manifested in a high degree of purity and intensity as an emanation from the world-soul, itself an emanation from the primary sub­stance of purest ether—a spark of the celestial fire, or, more accurately, fiery breath, which is a mean between fire and air, characterized by vital warmth more than by dryness. The physical basis of Stoic psychology deserves the closest attention. On the one hand, soul is corporeal, else it would have no real existence, would be incapable of extension in three dimensions (and therefore of equable diffusion all over the body), incapable of holding the body together, as the Stoics contended that it does, herein presenting a sharp contrast to the Epicurean tenet that it is the body which confines and shelters the light vagrant atoms of soul. On the other hand, this corporeal thing is veritably and identically reason, mind, and ruling principle (*λσγoς*, *voυς*, *ηγeμovικov*) ; in virtue of its divine origin Cleanthes can say to Zeus, “ We too are thy offspring,” and a Seneca can calmly insist that, if man and God are not on perfect equality, the superiority rests rather on our side. What God is for the world that the soul is for man. The Cosmos must be conceived as a single whole, its variety being referred to varying stages of condensation in Pneuma. So, too, the human soul must possess absolute simplicity, its varying functions being con­ditioned by the degrees or species of its tension. It follows that of " parts ” of the soul, as previous thinkers imagined, there can be no question; all that can consistently be maintained is that from the centre of, the body—the heart—seven distinct air-currents are discharged to various organs, which are so many modes of the one soul's activity.@@1 The ethical consequences of this position will be seen at a later stage. With this psy­chology is intimately connected the Stoic theory of knowledge. From the unity of soul it follows that all psychical processes—sensation, assent, impulse—proceed from reason, the ruling part; that is to say, there is no strife or division: the one rational soul alone has sensations, assents to judgments, is impelled towards objects of desire just as much as it thinks or reasons. Not that all these powers at once reach full maturity. The soul at first is void of content; in the embryo it has not developed beyond the nutritive principle of a plant *(φυσις)* : at birth the “ ruling part ” is a blank tablet, although ready prepared to receive writing. This excludes all possibility of innate ideas or any faculty akin to intuitive reason. The source of all our knowledge is experience and discursive thought, which manipu­lates the materials of sense. Our ideas are copied from stored- up sensations. No other theory was possible upon the foundation of the Stoic physics.

Note the parallel between the macrocosm and the microcosm. The soul of the world fills and penetrates it: in like manner the human soul pervades and breathes through all the body, informing and guiding it, stamping the man with his essential character of rational. There is in both alike a ruling part, though this is situate in the human heart at the centre—not in the brain, as the analogy of the celestial ether would suggest. Finally, the same cause, a relaxation of tension, accounts for sleep, decay and death of man and for the dissolution of the world ; after death the disembodied soul can only maintain its separate existence, even for a limited time, by mounting to that region of the universe which is akin to its nature. It was a moot point whether all souls so survive, as Cleanthes thought, or the souls of the wise and good alone, which was the opinion of Chrysippus; in any case, sooner or later individual souls are merged in the soul of the universe, from which they proceeded. The relation of the soul of the universe to God is quite clear: it is an inherent property, a mode of His activity, an effluence or emanation from tne fiery ether which surrounds the universe, penetrating and permeating. it. A Stoic might consistently main­tain that World-Soul, Providence, Destiny, and Germinal Reason are not mere synonyms, for they express different aspects of God, different relations of God to things. We find ourselves on the verge of a system of abstractions, or “ attributes turned into entities,” as barren as any excogitated in medieval times. In a certain sense, Scholasticism began with Chrysippus. To postulate different substances as underlying the different forces of nature would have been to surrender the fundamental thought of the system. What really *is—*the Pneuma—neither increases nor diminishes; but its modes of working, its different currents, can be conveniently distinguished and enumerated as evidence of so many distinct attributes.

One inevitable consequence of materialism is that subject and object can no longer be regarded as one in the act of perception, as Plato and Aristotle tended to assume, however imper­fectly the assumption was carried out. The presump­tion of some merely external connexion, as between any other two corporeal things, is alone admissible and some form of the

@@@1 These derivative powers include the five senses, speech and the reproductive faculty, and they bear to the soul the relation of qualities to a substance. The ingenious essay of Mr R. D. Archer Hind on the Platonic psychology *(Journ. of Phil.* x. 120) aims at establishing a parallel unification on the spiritualistic side; cf. *Rep. x. 612 A.*