

But the maid, unconscious, remains unmoved
She knows not the voice of her own beloved.

He bends his step toward his childhood's home.
To his cheeks so brown the tear drops come.

Near the cot his mother is wending her way;
"God bless thee, beloved," 'tis all he can say.

The mother—she turns and shouts with joy;
In her arms she is clasping her truant boy.

Though the sun may swart, and the beard may grow,
The mother, the mother her son doth know.

SCIENCE.

Pleasant Ways in Science.

No. III.—IDENTITY AND CHANGE.

To be the same, and yet different, is one of the curious problems which science presents to us. It appeals to us when we encounter the question of personal identity, and are certain that the old man passing away from us down the vale of time is the same individual that, eighty years ago, commenced his visible being under the care of nurses, who supplied the wants of infancy, enabled him to grow to childhood, to youth, to manhood, to maturity, and then to old age. All through life identity and change are exhibited to us. Each breath takes away a portion of the being that was, and brings into our organization a portion of the being that is to become; and yet we feel there is a larger and broader identity of individuality preserved throughout all these changes than can be accounted for upon any principle of discarding physical organization from our reckoning, and looking only to the spiritual essence that has pervaded and animated each stage. Whatever may be the nature or the mode of connection of mind and spirit, they seem so bound together, that all the gradations of our being may be compendiously spoken of as parts of the one enduring I.

Psychologically, the I may be conceived to begin with its own consciousness, and to endure so long as that consciousness remains. If, indeed, as some have supposed, consciousness went to sleep for ages, and then revived, only a prolonged slumber would have affected the I, and that slumber of ages might seem to it only like a momentary interruption of those processes of thought, feeling, and sensation by which we know that we exist.

We cannot look upon our physical organization as nothing more than a machine which our mind or soul plays upon like an instrument, or receives messages from like a king. It may perish while we remain. It does so perish day by day, and we do remain. The new materials take the place of old ones, but those materials which help to compose us at any moment seem to constitute a veritable and, for their time of office, an essential portion of ourselves.

Passing from conscious identity in the midst of change, let us take a survey of the lowest class of change and identity that we can conceive; and we find it beautifully illustrated in a dialogue in *Cersted's Soul in Nature*. The scene is a waterfall, and the Swedish philosopher makes one of his speakers exclaim, "You here receive an impression of the fall of a great mass of water, which every time comes from the same enormous height, and always encounters the same obstacles. The dispersion of the drops, the foam, the sound occasioned by the fall, as well as by the roaring and foaming of the water, which always arise from the same causes, ever remain the same. In the impression which all these things produce upon us we feel a variety, but at the same time a totality; or, in other words, we feel the variety of the single impressions as the effect of one great action of nature produced by the peculiar conditions of the locality. Perhaps the invariable in this phenomenon might be termed the thought of Nature inherent in it." (1)

It is the peculiar function of organic nature to exhibit a higher kind of identity amid change, and the quantity of regulated and co-

ordinated action that takes place in an organism is a measure of its perfection and importance. The animal stands higher than the tree, and its various processes of growth and action are dependent upon or associated with the putting together and the taking of pieces of more complicated substances than those which constitute the great bulk of the plant. The muscular system of animals exhibits a complexity of chemical formation corresponding with its elaborate arrangement of parts; the nervous system of animals is remarkable for its chemical complexity; and no thought, feeling, or volition occurs in a living body, without a multitude of atoms undergoing oscillation and changes of place.

If we consider our globe as an individual orb, we trace again the co-existence of identity and change. In one sense, it is certainly the same globe as that on which the Mastodon trod with monster step—the same as that across the fields and lakes of which the Pterodactyl, or great flying lizard, stretched his dragon-wing—the same as that over whose morasses gigantic ferns waved their branches at one period—and in whose seas, in a remoter age, the so-called Eozoon built his complicated house. Nay, we may go further back, and accepting as probable the nebular hypothesis, we find it the same globe as that molten ball which resulted from the condensation of those thin and subtle gases that were the physical progenitors of all the structures it now contains. Whatever name it bore amongst the immortals, by that same name, bearing testimony to its identity, it may be known through all the ages of future and of ceaseless change. Its destiny may be to pass through modes of existence as different from that in which we now find it, as its present form and aspect differ from the nebulous cloud, or the seething fiery ball, and it will still be what man in his day denominated the earth—but yet how changed!

Mental identity is evidenced by continued and recurring consciousness. Could we conceive a being that only thought and felt once in a thousand years, he might be as certain of his existence and of his identity as another being capable of evolving thought and becoming conscious of feeling any number of thousand times in a second. We have clocks with short pendulums, and clocks with long ones; and could we construct a chronometer with a pendulum so long, that it would require ages for the completion of its gigantic sweep, its far-separated beats would bear the same relation to each other, and testify to the identity of the instrument, as completely as does the quick and busy ticking of the little watch.

We cannot limit the time distance between the co-ordinated successions that may be comprehended under one identity, nor can we limit the space distance of portions of one great whole. In the fabric of a little ball which we can hold between our fingers incessant motions are going on, but yet the ball remains the same for its appointed time. All its particles, with all their movements, are, so to speak, under the dominion of, and are the expressions of, the same idea. The globe, with its mightier changes, has a similar identity; the solar system is *one* again in its harmonious relations—ever changing, but yet the same. May we not go further, and see a still more gigantic oneness in the universe, imaging the greatest oneness which man is able to conceive?

It is common, though scarcely philosophical, to speak as if each globe and system constituted an isolated existence. Modern philosophers have indeed imagined—without sufficient reason—that the sun continually receives additions to his mass in the shape of bombarding meteors, whose crash against his sides they suppose the physical cause of the renewal of his heat; and comets, in their eccentric orbits, have been thought likely to roam within the attraction of bodies powerful enough to stop their wanderings and appropriate their materials. But there is a wider supposition that seems to have the reasoning of analogy to commend it, and according to which all the matter throughout the universe is in eternal flux. Here nebulae condense into planets, or suns; there suns and planets dissipate into nebulae. Astronomers and physicists fill space with an ether, whose vibrations are light and heat; but if such an atmosphere of space exists, why should it be subject to vibrations only? Why should not, as some have supposed, this all-enwrapping ether-sea have its currents and its waves? Why should not its very material be condensed in this place, and renewed or re-etherized in that? To be anything which concerns *physical* science, this ether must be a form of matter; and if so, why should not we consider it as an atmosphere common to all worlds, and possessing properties, in reference to all the host of heaven, bearing some analogy to the properties which an individual atmosphere bears to an individual globe?

In a former number of the *Intellectual Observer*, an instrument, the "Rigid Spectroscope," an invention of Mr. Browning, was described as devised for the performance of some experiments suggested by Mr. Balfour Stewart. That able physicist wished to see whether, by moving a spectroscope from a low latitude to a high one, and thus materially changing the force of gravity, any motion, however slight, would be

(1) We quote this passage from Bohn's edition of the translation made by Leonora and Joanna Horner. We have omitted the word "*superficially*," which in the translation precedes "termed," as it can scarcely, in its ordinary acceptance, express Cersted's meaning.