may by degrees be firmly established. We may anticipate the sneer that speculations on the nature of matter do not help much in dealing with what is called 'practical politics,' apparently because it consists chiefly of unpractical and impracticable verbiage. Perhaps not; but the intellectual habit and the intellectual capacity which impel and enable a man immersed in work to keep himself acquainted with the changing aspects of science upon which such speculations depend, do most potently help him in whatever business it may be his lot to transact. The precise color of his speculations is not very material, since it depends upon personal idiosyncracies of which the man himself could give none but the most inadequate account. In essence these speculations are as old as human thought, and all through the ages we find the most powerful intellects ranged on opposite sides. In form the speculations are constantly changing, and so are the names of the opposing parties. What we have to ask about a man is not on which side he stands, but what mastery he shows of the contemporary scientific achievement which gives to the secular controversy the form it wears for the men of his own time. That mastery, according to its degree, makes him an efficient intellectual force in whatever field he may choose to exert himself.—London *Times*.

AN ANCIENT FICTION.

The astonishing longevity of popular delusions in natural history is nowhere better illustrated than by the credence given even by educated folk at the present day to alleged discoveries of frogs, toads and other animals within hermetically sealed cavities, such as inside overgrown hollows of trees or closed interior spaces of rock.

Dr. Traquair, director of the Edinburgh Museum, mentions a letter published in the London *Times* a few years ago by the late Miss Amelia B. Edwards, the eminent Egyptologist, on the finding of a live toad deep down in boulder clay at Greenock, and refers to another accomplished author who took umbrage because some one ventured to question his assertion that live frogs occur in the Old Red Sandstone. Dr. Traquair is right in supposing beliefs of this nature to have considerable antiquity, although he professes ignorance as to how far back they can be traced into the past.

Probably not many will be surprised to learn that this popular delusion has a continuous history in literature of at least four hundred years; and if we include the so-called 'subterranean fish' of Narbonne, to which a special chapter is devoted in Rondelet's 'Ichthyology' (1554), a form of it is traceable as far back as the time of Aristotle. The occurrence of live fish underground, and the singular mode of taking them with the spade instead of the net, or hook and line, is mentioned repeatedly by classic authors, the most particular account being that of Polybius ('History,' xxxiv.). Older than these, though of scarcely germane nature, are the Biblical and secular legends of miraculous suspension of vital functions, of which the tale of the Seven Sleepers is an example.

References might be given to more than a score of sixteenth to eighteenth century writers who make more or less particular mention of the occurrence of live animals in cavities long closed to the air, the list including such prominent names as Conrad Gesner,* Agricola,† Francis Bacon,‡ Athanasius Kircher,§ Libavius|| and Astruc.¶ It is not, however, worth while to take further notice of these early accounts, unless it be one which is remarkable for its *naïveté* and evident truthfulness. This narrative is to be found in the surgical works (book xxv., cap. 18) of Ambroise Paré, court physician of Henry III.,

* 'De omni rerum fossilium, etc.,' Zurich, 1565.

† 'De Animantibus subterraneis,' Cap. XXXV., Wittenberg, 1614.

‡ 'Natural History,' opus posthumum, cent. vi., § 570. Bacon says here: 'The ancients have affirmed that there are some herbs that grow out of stone; which may be, for that it is certain that toads have been found in the middle of freestone.'

§ 'Mundus subterraneus,' lib. viii., Amsterdam, 1664 and 1678.

|| 'Singularium,' part i., de carne fossile; part iv., de Batrachiis, cap. 25.

¶ 'Mémoires pour l'Histoire naturelle de la Province de Languedoc,' part iii., chap. 10, Paris, 1737.

king of France and Poland, and sometimes called 'father of French surgery.' We would fain reproduce it in all the quaintness of the original, as follows:

Étant à une mienne vigne, près le village de Meudon, où je faisois rompre de bien grandes et grosses pierres solides, on trouva au milieu de l'une d'icelles un gros crapaud vif, et n'y avoit aucune apparence d'ouverture, et m'esmerveillai, comme cet animal avoit pû naître, croître et avoir vie. Lors le Carrier me dit qu'il ne s'en falloit esmerveiller, parce que plusieurs fois il avoit trouvé de tels et autres animaux au profond des pierres, sans apparence d'aucune ouverture.—(1564).

Differing in nowise from the above, except that they are attested by numerous reputable witnesses, are the accounts presented to the French Academy in the early days of its history, one such being preserved in the *Mémoires* for 1719, and another in the volume for 1731. Nor should one fail to note what the old Toulonese historians have said concerning edible mussels which the inhabitants cracked out of the solid rock in the harbor of their city. Instead of going clam-digging, those in search of a delicacy sallied forth with a hammer, and the shell-fish so obtained were said to have had an admirable flavor.*

Coming down to our own time and country, the curious will find in the *American Journal of Science* for 1822 (Vol. XIX., p. 167) an edifying description by Mr. David Thomas of the discovery of a live toad in a block of limestone during the excavation of the Erie Canal. The details of this incident, even including the fact that the toad got away, are authenticated by various 'witnesses of unimpeachable veracity,' one of them afterwards becoming a state senator, as we are told. And so with similar anecdotes, which meet the eye from time to time in the daily newspapers.

Not the slightest suspicion of untruthfulness in any of these instances is attached either to the narrator or to the spectators who corroborate the original statement to the best of their belief and knowledge. It is probably furthest from the minds of these worthy people wilfully to deceive the public, and yet, on the other hand, a little reflection shows that from the very nature of things such tales are incredible, and those who vouch for them must be mistaken in their observations, even as the most alert and sharp-sighted persons are deceived by the feats of a prestidigitator. The evidence given by the spectators would, so far as appearances go, be perfectly trustworthy, but when we subject their accuracy of observation and memory to the test of reason, which asks whether they relate that which is perforce impossible, the credibility of these witnesses is at once challenged. The fact remains that the sea serpent has not yet been captured, and in every instance these long-imprisoned frogs and toads and other animals have suddenly become vivified and succeeded in making their escape. Hence we are bound to agree with Dr. Traquair when he remarks that he 'should certainly not like to see the issue of a trial, civil or criminal, depend on the question of whether a man had seen the sea serpent, or had witnessed a family of young adders creeping down their mother's throat.'

* Bouche, H., 'Chorographie, ou Description de la Provence,' vol. i., p. 924, Paris, 1664. The account evidently refers to boring mollusks.

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SCIENTIFIC NOTES AND NEWS.

THE medal of the Society of Chemical Industry, awarded every second year for services to applied chemistry, has been presented to Dr. Ira Remsen, president of the Johns Hopkins University.

DR. LUDWIG SYLOW, professor of mathematics in the University of Christiania, has been made a foreign knight of the Prussian order 'pour le mérite.'

DR. MORITZ CANTOR, the well-known mathematician of the University of Heidelberg, celebrated recently his seventy-fifth birthday.

DR. WILLIAM H. WELCH, of the Johns Hopkins University, has given the Lane lectures at the Cooper Medical College, San Francisco, his subject being 'Infection and Immunity.'

WE learn from *Nature* that the Lancashire and Western Sea Fisheries Joint Committee has appointed Dr. J. T. Jenkins, professor of biology in Hartley University College, South-