

leaders. The doctrine has mightily taken here amongst us; it has afforded a sweet salve to uneasy consciences, and furnished a ground most acceptable to many for believing themselves elevated by science to a superiority over the superstitions of the past. It has formed the basis upon which the Patriarch of the Princess Theatre, Mr. Bright, has not ceased to claim a standing amongst that glorious brotherhood of ill-treated scientists that began with Socrates and ends—not, however, by the survival of the fittest,—with Mr. Bradlaugh; and it bids fair to influence the policy of the legislature under the protection of its patron, Mr. Stout. We have, therefore, much pleasure in submitting to our *demi-monde* of science certain nuts which, if we mistake not, it will somewhat puzzle them to crack, and which they must acknowledge to be worthy of their consideration since they have been put forward by one of the most eminent scientific men of the age. We submit them to those who have forsaken whatever form of the Christian religion they professed in order to induce them to reflect as to whether they have not staked momentous issues on very precarious authority; to Mr. Bright in order to suggest to him that he is, perhaps, acting on the principle that "fools rush in where angels fear to tread" in teaching his favourite dogma, and to our honourable Attorney-General in order to point out to him that on competent authority evolution is stated to threaten the well-being of society rather than tend to the promotion of its progress. Without further preamble or comment then, we give the following passages, which we have taken from an article in the *Quarterly Review* of January last, and which article is entitled "Scientific Lectures—their Use and Abuse,"—The name of Professor Virchow is at the present day, and must always remain, one of the most distinguished in the history of pathological research. He is Professor of Pathology in the University of Berlin; and he has also played a prominent part in public life. For his present reputation in Germany it will be sufficient to quote the description given of him the other day by the Berlin correspondent of the *Times* in reference to the speech now in question:—"The declaration contained in it," said this correspondent, coming from such a man as Professor Virchow, made no little noise in German lands. The great pathologist being considered a luminary in natural science, opposed to every species of orthodoxy and altogether innocent of faith, the cautious distinction he drew between fact and conjecture went far to convince the uninitiated that the production of man in the chymist's retort was not likely to be recorded amongst the discoveries of the age." The speech, in fact, was delivered on the occasion of the fiftieth annual gathering of German Natural Philosophers and Physicians at Munich, (Sept. 22, 1877) and was elicited by some statements from some other German Professors, who in the recklessness of their speculations have distanced even Professor Tyndall. The most advanced advocate of the Darwinian theory abroad is probably Professor Haeckel of Jena, and this gentleman avowed his conviction not only that man had been developed out of the lower animals, but that organic life itself was a mere natural development of inorganic; and that, as Professor Virchow put it "Carbon, Oxygen, and Co. had at some time or other separated themselves from common carbon, and under special circumstances produced the first elements of an organic cell, and at the present day continue to produce them." "There are," he (Virchow) says, "at present few students of nature who are not of opinion that man stands in some connection with the rest of the animal world, and that such a connection may be discovered, if not with the apes, yet possibly at some other point. I freely acknowledged that this is a *desideratum* in science. I am quite prepared for such a result; and I should neither be surprised nor astonished if proof were forthcoming that man had ancestors among other Vertebrates. You are aware that I am now specially pursuing the study of anthropology. But I am bound to declare that every positive advance we have made in the province of prehistoric anthropology has actually removed us further from the proof of this connection. Anthropology is at this moment studying the question of fossil men. . . . If then, we study the earliest indisputable specimens of fossil men—who in the course of descent, or rather ascent, must stand nearer to our original ancestors—we invariably find a man, just such as men are now. . . . The old Troglodytes, the dwellers in pile-villages, and others, prove to be an exceedingly respectable society. . . . On the whole we must in reality acknowledge that there is an absence of any fossil type of a lower human development. Nay, if we take the sum of all the known fossil men and compare them with man as he now exists, we can positively assert that among living men there is a far greater number of relatively inferior individuals than among the fossils which are as yet known. Whether none but the highest geniuses of the Quaternary Period have had the good luck to be preserved to us, I will not venture to surmise. Ordinarily we conclude from the character of a single fossil object to the general character of those which are not found. This, however, I will not do. I will not assume that the whole race was as good as the few skulls which have been preserved. But I must say that not a single skull either of an ape or of an anthropoid ape has yet been discovered, which could really have belonged to a human being. Every increase in our possession of the objects which furnish materials for discussion has removed us further from the hypothesis propounded." The Professor proceeds to admit, of course, that it is possible the missing link in the evidence may yet be discovered; but he concludes:—"Only, as a matter of fact, we must positively recognise that as yet there always exists a sharp line of demarcation between the man and the ape. We cannot teach, we cannot pronounce it to be a conquest of science, that man descends from an ape or from any other animal. We can only indicate it as a hypothesis, however probable it may seem, and however obvious a solution it may appear." The speech by Professor Virchow is throughout a protest, in the name and in the interests of science, against such reckless dogmatising as that of Professor Tyndall. It was elicited, as we have explained, by two speeches, the one by Dr. Haeckel, the other by Dr. Naegeli, which asserted in the most positive form the extremest modern theories of development. . . .

He (Virchow) takes occasion to observe that by a large portion of the public, any general theory advanced by scientific men is sure to be carried still further "with a thousandfold greater confidence." He tells an amusing story of the exaggerated form in which one of his own discoveries came back to him from America: and "imagine," he says, "in what form the Evolution theory presents itself already in the mind of a socialist." . . . "Yes, gentlemen," he proceeds, "such a popular exaggeration of scientific theories may to some appear ludicrous; but it has a very serious bearing, and I will only hope that the descent theory may not entail all the alarm among ourselves which similar theories have actually produced in the neighbouring country. Undoubtedly this theory, if it be rigorously carried out, has an uncommonly serious side; and it will probably not have escaped you that Socialism has established a sympathy with it. This is a fact which we must clearly recognise." . . . "That," he says, "which is my accomplishment as a man of science, is precisely the knowledge of my ignorance. In chemistry, for instance—a science of which, though a proficient in it, he confesses he has not full mastery—the chief thing is, that I know what I do not know." "To attain," he again says, "such a clear view of the principles of the natural sciences, and such an exact acquaintance with the gaps in your own knowledge as to be able to say to yourself whenever you come upon such a gap, 'Now you are entering an unknown land'—this is what we ought to attain. If we were all sufficiently clear on this point, *there is many a one among us who would smite on his breast*, and confess that it is a very serious matter to draw universal conclusions respecting the development of things in general, while a man is not even master of the whole material out of which such conclusions have to be drawn." . . . We cannot follow Professor Virchow into the various illustrations he quotes; but one of them offers so close a parallel to the present position of the Darwinian doctrine, that it may possess a special interest for our readers. The Professor is admitting that there is considerable attractiveness to the scientific mind in the notion of a continuous growth of all organic life, and its natural development from inorganic. "It corresponds to that tendency towards generalisation which is so natural to man, that in all times, even up to the most ancient period, it has found a place in the speculations of mankind." But, on the other hand, he says we must emphasize the fact "that all real scientific knowledge respecting vital processes has proceeded in precisely the contrary way." That is, it has proceeded by the establishment of exceptions to hypotheses which were at one time deemed universal in their application. For instance, says Professor Virchow, we date the commencement of our real knowledge of the development of the higher organizations from the day when Harvey laid down the *law omne vivum ex ovo*, every living thing springs from an egg. It would be the greatest ingratitude not to recognise that this theory constituted an immense advance, and was of the highest value for practical purposes. But it has been proved not to be universally true. Since Harvey's time a great series of new forms of life have been observed, in which the multiplication of the kind is by several various methods. Even if the Darwinian theory were better established than it is, it would be liable to similar exceptions. "Of course," says Professor Virchow, "if a man is determined to have a theory of the universe, and equally determined not to accept any theory which supposes a creator, he is forced to surrender himself to a thorough-going theory of development. There is no escape from the alternative; while at the same time it remains a bounden duty to acknowledge that no proof of the theory has been furnished." But theories positively asserted and afterwards disproved have recoiled upon science to its discredit; and the Professor extracts from these illustrations the very necessary warning that "If we wish to maintain our claim upon general attention, we must resist the temptation to thrust our own surmises, our own mere theoretical and speculative edifices, into the foreground, as though we intended, by means of them, to construct a complete theory of the universe." . . . "We must strictly distinguish between that which we wish to teach and that after which we are only enquiring. . . . Every attempt to transform our hypotheses into dogmas, to introduce our surmises as the bases of instruction—above all, the attempt simply to dispossess the Church and supplant its dogmas forthwith by a religion of evolution—believe me, gentlemen, such an attempt must be wrecked, and in its wreck will involve the greatest damages to the general position of science. . . . Whoever speaks or writes for the public ought, in my opinion, to examine with double accuracy how much of what he thinks and says is objectively true. He ought to be as careful as possible that all his purely inductive generalisations, all his general conclusions according to the laws of analogy, however probable they may seem, should be printed in small letters under the text, and that in the text he should place nothing but that which is really objective truth. Bacon of old said truly that "Knowledge is power." But the knowledge he meant was not speculative knowledge, not the knowledge of mere hypotheses, but objective and actual knowledge. Gentlemen, I think we should misuse our power—we should imperil our power—if in teaching we do not confine ourselves to this thoroughly legitimate, thoroughly secure, and unassailable province."

OUR contemporary the *Daily Times* occasionally honours us with its notice. According to its humour it handles us differently; sometimes the perusal of one of its articles makes us feel as if our nose had been tweaked, or a sound cuff administered to either side of our face; sometimes we are "taken up tenderly," and in the present instance we are almost reminded of our grandmother chiding her dear boy for telling fibs. Our contemporary has ere now accused us of being ignorant and we did not deny the charge. On the contrary we confess our ignorance; we are very conscious of it. So much so indeed, that we invariably refrain from making arbitrary or ill-grounded assertions, and never commit ourselves to a statement unless we are provided with a competent authority on which to fall back when we are called to account. We do not exactly emulate Montaigne, who tells us that he made quotations without acknowledging them, in order that he