cing to the safety of his hypotheses, are cast aside; as, for example, the well-known work of Carrington on the solar spots, "for the sun was an especial study with him [the author] before Mr. Carrington was born, and he prefers his own approximations" (p. 30).

It is not, however, so hard to see how an ill-balanced enthusiast may persist in this course indefinitely, as it is difficult to conceive of the intellectual stupefaction which busies itself with the preposterous invention of suitable facts to match agreeable hypotheses. When, for example, Mr. Bassnett finds his theory of ethereal vortices cannot help going to pieces when he tries to make it account for the observed phenomena of the periodicity of the solar spots, he has no hesitation in fabricating a great planet outside of Neptune, of such mass, and position, and distance from the sun, as to bring about the absolute harmony of his hypothesis with the observed periodicity; nor does he shrink, when he finds it necessary, to make this convenient planet travel round the sun in just the other way from what all the hitherto recognized planets do.

But unaccountable idiocy can be tolerated where unconscionable conceit cannot. When the world's greatest investigators of solar phenomena confess that the sun and its surroundings are the mystery of cosmical physics, this writer pops into prominent print with a book "whose credentials are an undeniable ability to divest that subject of its mystery." Sun-spots, to say the least, have yielded all their secrets to him; and he retires from an excursion of half a hundred pages on his own theory of the solar spots with a self-complacency more alarming than a thousand eurekas, for he finds that "the solar spots are not such formidable mysteries, after all" (p. 172).

The gross failure of the author's life as a scientific man appears to lie, just where many lives make shipwreck, in his early penetration with the idea that his destiny was with the great. It was for others to drudge in collecting facts, but for him to cut a grand figure in the development of striking and original generalizations,— an unhappy fallacy of ill-balanced minds. 'Our business,' he says, 'is to establish a *theory*,' etc.; and later (p. 129) we are told that "in 1853 the author published the only possible solution of the problem [of sun-spot periodicity]." The persistent refusal of scientific men to recognize his arrogant claims leads him to indulge a vindictive insolence. His experience of the treatment which his theory of electric vortices has received during the past thirty years is a sorry one, and encourages occasional despondency, and the "growing conviction that the scientific world, as a body, loves darkness rather than light." However, he falters not; for it is better to "have the approval of a few kindred spirits, than drift with the current which is sweeping a deluded majority to inevitable oblivion."

How long ought the patience of scientific men to indulge this badgering assumption? Mr. Bassnett has repeatedly addressed himself to the acknowledged leaders in science, and has been just as repeatedly snubbed. At various scientific assemblies he and his ubiquitous electric vortices have been the dread of presiding officers, and the butt of 'Section A.' So far, however, from inculcating the necessity of humility, all these merited rebuffs have only emboldened him to renewed impertinence, which he has the effrontery to term 'scientific spirit.'

A book so nearly valueless we have rarely seen. A single chapter, however, — that on the ethereal medium, — is worth the reading: it is suggestive as to lines of research which may some time come to be worth following out; and the vigorous statements of the author's beliefs are an interesting study. But as a whole, little good, if any, can come from the printing of such a volume; and with equal certainty the harm it can do is a minimum, for its readers will be few, and chiefly confined to such of the curious as know too much to be led astray.

THE VALUE OF SORGHUM.

Sorghum: its culture and manufacture economically considered as a source of sugar, syrup, and fodder. By PETER COLLIER, Ph.D., late chemist of the U. S. department of agriculture. Cincinnati, *Clarke*, 1884. 11+570 p., illustr. 8°.

ALTHOUGH the cultivation of sorghum in the United States, and its utilization as a source of sirup, date from about the middle of this century, and although more or less frequent attempts to produce sugar from it had been made at the time when the U. S. department of agriculture began its investigations (1878), the most conflicting opinions prevailed as to the value of the plant as a source of sugar. The remarkable growth of the sorghum-sugar industry within the last few years, and the very general interest in the subject now manifested, may be fairly ascribed mainly to those investigations, and to others which were incited by them.

It is a matter of congratulation, that the task of recording the results of recent inves-

tigation and experience in this important subject in permanent and accessible form has been assumed by one so competent as the late chemist of the department of agriculture, under whose direction or at whose instigation so much of the work has been done. Dr. Collier's scientific standing, and his thorough knowledge of the sorghum question, will hardly be doubted; and, if at times he betrays the sanguine temper of the enthusiast, the failing is one which leans to virtue's side.

In the book before us we have a very full account of the history of sorghum; a description of its leading varieties, including a table for their identification; and the result of the experience thus far had, relative to the management of the crop and its profitable manufacture. The preparation and manuring of the ground; the selection of suitable varieties; the best methods of planting, cultivating, and harvesting; the effects of climatic conditions; the development of sugar in the plant as related to the proper time for cutting the cane; the operations of milling, defecating, evaporation of the juice, and separation of the sugar; and the utilization of the waste products, — all receive a due share of attention; and the whole constitutes an excellent handbook for the intelligent sugar-maker.

The book, however, is more than a sugar-maker's handbook. One of the most commendable features of the work is the fulness with which the evidence upon each point in turn is laid before the reader, thus enabling him to judge for himself of the value of the conclusions reached. This feature of the volume cannot fail to make it of great value to all who are engaged in investigations in this direction; for, not only are the results thus far obtained given with much fulness, but the author is as careful to exhibit our ignorance as our knowledge, and does not fail to point out the directions in which further investigations are needful.

That the latter are numerous need hardly be said. In spite of the great amount of work which this book records, or refers to, much yet remains to be done to render this industry an assured success. Indeed, to us the need of more knowledge is really the most striking conclusion to be drawn from a study of what is already known. Particularly is this the case with regard to the economies of sugar-making, where a wide field is open to investigation. If Dr. Collier's volume shall prove an incitement and aid to the acquisition of more light upon these and other points, as well as be of use to the practical sugar-maker, he may account it as in the best sense a success.

NOTES AND NEWS.

The library of the late Professor Henry has been purchased from his heirs by Dr. A. Graham Bell. It contains about two thousand volumes, at least one-third of which treat of electrical science, and many of these bear marginal notes in the handwriting of Professor Henry. One of the terms of the sale was that the library should be kept intact.

— The Norwegian bark Loveid, recently arrived in Philadelphia, reports a very peculiar squall experienced Oct. 18, in latitude 39° 49′ north, longitude 69° 5′ west. During fine, clear weather, with a light breeze from the north-west, heavy banks of clouds of most threatening aspect suddenly appeared, driving in every direction. Almost immediately a heavy squall of wind and rain struck the vessel, the wind shifting quickly all around the compass. In the midst of this disturbance, which lasted about an hour, a single peal of thunder was heard, and simultaneously a bolt of lightning struck the fore royal mast-head, and ran down the mast to the royal yard, which was almost destroyed. The lightning, which looked like a ball of fire, then ran out on the horn of the cross-trees, and 'burst' with a loud report, scattering sparks all over the vessel. The barometer fell suddenly from 30 to 28.60, and then rose as rapidly, the weather becoming pleasant immediately afterwards. This is a rather peculiar squall, considering the locality and the season.

— The monthly weather-review of the signal-service, prepared, as announced for the first time in the August number, by Second Lieut. W. A. Glassford, has come to be a quarto of twenty-eight pages, with five charts. This is a good growth from the four small pages and three charts of the first issue, eleven years ago. Then, the headings were storms, anti-cyclonic areas, temperature, precipitation, peculiar phenomena and facts, rivers, and cautionary signals: now, all these subjects are treated in much greater detail; and among the many additional topics there may be mentioned atmospheric pressure and its range (illustrated by a new style of chart), Atlantic storms and ice, range of temperature, frosts (illustrated by a chart for Aug. 9 and 25), winds, local storms, tornadoes and thunder-storms, sunsets, drought, two and a half pages on the earthquake of Aug. 10, meteors, and notes of state weather-services for Alabama, Nebraska, Tennessee, Missouri, Louisiana, Ohio, and Georgia. The storm-tracks for the month are remarkably regular, and, with insignificant exceptions, all lie north of the Great Lakes and St. Lawrence: no tropical cyclones were felt along the seacoast. Nine tornadoes are reported, and many violent thunder-storms. Some of the results of the special studies of the latter, undertaken by Mr. H. A. Hazen during the past season, take form in a brief summary, from which it appears that the mean distance and direction of the nine hundred thunder-storms recorded in August, from the centre of the broad cyclonic storms in which they occurred, was five hundred and fifteen miles, a little west of south. A full account of these studies will be of much value