

—A new explosive has been invented by F. Redtenbacher, a mining engineer in Austria. It probably contains only the elements of ordinary powder, but in proportions determined by twenty odd years of research. This powder is brownish black in color. The advantages of the explosive, which is known as 'miline,' are its insensibility to percussion or friction, and that it can only be ignited by a spark. There exists, therefore, little danger in its transportation and preparation. It does not undergo any modification under the influence of temperature, and only ignites at 335° to 340° C. It burns with little smoke, and does not produce any deleterious gas. It can be employed exactly as powder, and, when well tamped, its effects are comparable with those of dynamite.

—Mr. A. Vogel has recently shown (*Centralblatt f. agric. chemie*) that cinchona-trees, growing in hot-houses in Europe, develop no quinine in their bark.

—King Oscar of Sweden has ordained two prize contests on oriental subjects, — one, the history of the Semitic languages; the other, a description of the Arabic civilization before the time of Mohammed. The prizes are a gold medal worth 1,000 Swedish crowns, and a sum of money equal to 1,250 Swedish crowns. The treatises may be written in Latin or German, and may be forwarded to Professor Fleischer of Leipzig, or Professor Nöldecke of Strassburg, before June 30, 1888.

—The investigation before the Massachusetts legislative committee on the subject of arsenic in wall-paper indicates that the danger has been exaggerated. Prof. C. F. Chandler testified, that, from careful experiments, under no conditions could arsenical poisoning occur through breathing arsenaturated hydrogen from wall-paper, and that the only source of danger would be from friction alone.

—Prof. L. Geiger of Berlin is about to issue a *Zeitschrift für die geschichte der Juden in Deutschland*. It will be scientific in character and treatment, and, in addition to essays and reports of research, it will contain summaries of historical materials that are difficult of access or hitherto unprinted. It will also make its bibliographical notes an especial feature.

—The Smithsonian report for 1884, just issued, contains, like the previous ones, the secretary's annual report, and summaries of scientific progress in the natural sciences, by E. S. Holden, C. G. Rockwood, F. M. Green, C. Abbe, G. F. Barker, H. C. Bolton, E. S. Dana, J. B. Marcou, T. Gill, and O. T. Mason, together with a number of miscellaneous papers on anthropology.

LETTERS TO THE EDITOR.

***Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

New York agricultural experiment-station.

In your review of the fourth annual report of the New York agricultural experiment-station (*Science*, vii. No. 165) you deal very leniently with some of the most glaring faults of that report. This is certainly the pleasanter way; but does it best subserve the cause of truth and progress? That station is unquestionably doing valuable work for the cause of progressive agriculture, and, because of the ability thus manifested, the anxiety of the friends of that cause is the greater that its splendid opportunities should not be frittered away in a kind of work which, if persisted in, will inevitably bring about its ruin.

The fundamental mistake in the management of this station, as manifested by this report, is the endeavor to cover too much ground. The field of agricultural experimentation is so vast, that he who would accomplish any worthy result must confine his labors to a limited portion of it; but in this case so many problems have been attacked, that few receive that close and careful attention which is the first requisite of truly scientific work. The director makes frequent reference to the necessary incompleteness and unreliability of isolated tests, and does good work in showing the variability of duplicates; but the infrequency with which he collates the results of his present experiments with those previously made by himself or other equally competent authorities, and the frequency with which he disregards his own testimony respecting the necessity for the duplication of tests, intensify the feeling that the value of a large proportion of the work of this station is seriously impaired by its desultory character.

The impression, that, in much of this work, quantity is attained at the expense of accuracy, is strengthened by page after page of the report. Typographical errors are difficult to wholly avoid; but it is putting the case very mildly to say that they occur with unnecessary frequency here. This point, however, might be passed without notice were these the only evidences of hasty or careless work. In the tabulated report of the experiment in feeding starch-waste, for instance, we are left to conjecture which columns of figures relate to hay, and which to starch-meal, while no practical feeder would have been guilty of the absurdity of feeding a rich meal *ad libitum*, and following it by hay fed in the same manner, where it was desired to make a scientific test of the feeding-value of either food. Under the circumstances, the allusion to the capriciousness of appetite in the cows under test is amusing.

The fertilizer test recorded on p. 40 affords another striking example, both of the crudity of the methods employed at this station, and of the carelessness in reporting results. What would the magnificent Rothamsted experiments have amounted to, had the plots in Broadbalk field received enormous dressings of fertilizers one year, none the next, and varying quantities in the succeeding years, or if their interpreter had shown such carelessness in the summarizing of results as has been shown in giving the total quantities of fertilizers used in this case?

In conclusion, I must wholly dissent from the idea conveyed in the closing paragraph of your review,

that an experiment may have a so-called practical value and yet be worthless to the man of science. What is science but accumulated and co-ordinated facts? What fact is there which confirms, disproves, or illustrates any supposed law of Vegetable or animal growth, that is not valuable to the scientific man, and to the farmer as well? What agricultural experiment, worthy the name, but must perform this function? It is true, the farmer may be more interested in the results of the experiment, as in a comparative test of different varieties of wheat, while the scientist may be more desirous of ascertaining what constitutional peculiarity enables the one variety to surpass the other in yield; but in either case the fact that the one variety is the more productive is the stimulus of the investigation, and the methods of culture must be the same if trustworthy data are to be obtained for the use of either scientist or farmer. I do not forget that valuable facts have been learned from experiments which would be utterly impracticable in the field, and I would be the last to deny the usefulness of such work; but, until the applicability of these facts to the methods of the farmer has been demonstrated by field experiment, they are practically valueless. I do not deny that the study of isolated individuals, or of small groups of individuals, has a legitimate place in the work of the experiment-station; but, until the results of that study are shown to be applicable to the field or to the herd, they are worthless to the farmer, and equally worthless to the scientist. But this demonstration must be made by men trained to the scientific method.

C. E. THORNE.

Settlement of labor differences.

Last week's *Science* contains some views of Mr. N. M. Butler on the 'Settlement of labor differences,' which claim to be from the stand-point of 'science and philosophy,' which is explained to mean freedom from false notions and prejudices, and to be the observation of facts and relations as they are.

He says that 'we' are apt to look upon the present economic system as fixed and final. Who are 'we'? 'The fact as it is,' is that in America, England, France, Germany, etc., men by the thousands and hundreds of thousands most decidedly do not feel that way at all. Numerous American citizens known as Knights of labor have combined and organized for the express purpose of changing the present wage (i.e., private capital) system into an integral co-operative one; and, what is more, they work with earnestness, determination, and devotion to realize that end. Instead of "feeling an irresistible desire to look upon the (social evolution) process as completed, and the book of evolution as closed," they feel an irresistible conviction that society is entering on the threshold of a new form of economic organization. This belief is scientific; that is, it is based on experience carefully made and closely analyzed, as may be seen in the works of Karl Max, F. Engels, Henry George, and very clearly in that American writer George Gronlund's book, 'The co-operative commonwealth.'

Mr. Butler says something about "the ethical fact that there is a superiority of possessions." What can it mean?

Mr. Butler adds his voice to the chorus of 'arbitration' fetish-worshippers. Arbitration is to have 'magic' results. So it must, if it will harmonize the

interests that are diametrically opposed, as are those of capitalists and laborers in regard to sharing the product of labor.

But, say the 'arbitration' and 'harmony' preachers and Mr. Butler, the product is the combined result of the efforts of the capitalist and laborer. Sometimes the capitalist adds his efforts to the work of producing by direct labor, or indirectly by doing the requisite directing of the work, and sometimes he does not. When he does apply personal effort, he is entitled to reward; but that is a different thing from the profit on his capital which will go to him if he hires managers or agents, or is merely an investor or shareholder in a business he neither does nor can manage, nor in any way add 'effort' of his own to the work of production.

No, the capitalist need not work. He can (and many do) live in idleness, consuming enormously without producing at all, and, on an average, he never gives an equivalent of effort for what he gets: hence there is want of equity in the capitalistic system.

It is self-evident that no arbitration, but only a radical change of the system, can abolish this injustice; and this injustice is the cause of the 'labor differences.'

'Christian charity' will not suffice here; that is, the 'give all you have to the poor' doctrine will not do, but, rather, a modernized adaptation of the institutions of the primitive Christians, who had some primitive form of integral co-operation, for they held 'all things in common' (see the story of Ananias).

As to arbitration as a sort of palliative patchwork for making temporary compromises, perhaps it is good for that; but 'brute force,' in the form of police and militia, has to stand behind it to make capitalists keep their agreement, which they have broken in innumerable instances when it was in their interest and power.

Whether the change from the capitalistic to the co-operative mode of production will be by 'brute force' depends on the resistance the capitalists make to the course of evolution. History shows that privileged classes generally have appealed to brute force whenever their privileges were in danger.

The advice of science they do not heed. It is interest that guides them. Science, that is, our judgment of future facts by past ones, says the course of evolution of human society tends to abrogate all privileges and equalization of rights and duties. This is the democratic principle. When applied to social economy, it is termed 'socialism' or 'social democracy.' The capitalist cannot be a mere trustee without first ceasing to be a capitalist. This implies an entire change of the laws of property: hence the advice of science to labor is, Organize to make the requisite change of laws; that is, go into politics as a party to establish an economic republic, *electing* your directors of labors. That will settle all differences between capital and labor, because there will be no capitalist, and all will be laborers or starve.

CHAS. FIELD.

Eskimo building-snow.

In your issue of Jan. 15, 1886, you give an illustration of what purports to be 'hardened snow' impacted on a Mount Washington telegraph-pole by a strong gale. During the past winter I have