of the solar rays increased. The results, however, which he has obtained during the brief sunshine of the present summer, leads him to hold that opinion in suspension. In many of the spectra obtained (copies of which will be appended to the printed report) there appears to be evidence of the conversion of one form of force into another—the change indeed of *light* into *action* or chemical power; and, again, as in Mr. Stokes' experiments, the exhibition of the ordinarily invisible chemical rays in the form of *light*.

Prof. Stokes offered some remarks upon the different effects produced by the spectrum, dividing them into luminous effect, chemical action, calorific power, phosphorescence, and fluorescence. These were different effects resulting from the same cause, and he did not consider that sufficient evidence had yet been given to warrant the idea that there existed any dissimilar agencies in the solar rays.

Prof. Johnston, the Rev. V. Harcourt, Dr. Daubeny, Mr. Claudet, and others, took part in the conversation which followed.

'*On the Employment of the higher sulphides of Calcium as a means of Preventing and Destroying the Oidium Tuckeri, or Grape Disease*,' by Dr. Astley P. Price.—Of the many substances which have been employe to arrest the devastating effects of this disease, none appear to have been so preëminently successful as sulphur, whether employed in the state of powder or flowers of sulphur, or by sublimation in houses so affected. Notwithstanding the several methods described for its application to the vines, I am not aware that any had been offered in 1851, when these experiments were instituted, by which sulphur might be uniformly distributed over the branches, and be there deposited in such a manner as to be to some extent firmly attached to the vine. Three houses at Margate, in the vicinity of the one in which the disease first made its appearance in England, having been for the space of five years infected with the disease, and notwithstanding the employment of sulphur as powdered and flowers of sulphur, no abatement in its ravages could be discovered,—I was induced to employ a solution of pentasulphide of calcium, a solution of which having been found to act in no way injuriously to the young and delicate shoots of plants, was applied to the juices in a dilute condition; the object in view being that the compound should be decomposed by carbonic acid, and that the excess of sulphur should be deposited with the carbonate of lime in a uniform and durable covering on the stems and branches of vines. This was adopted, and although but few applications were made, the stems became coated with a deposit of sulphur, and the disease gradually but effectually diminished, in so much that the houses are now entirely free from any trace of disease or symptoms of infection. The young shoots are in no way injured by its application, and the older wood covered with this deposit of sulphur continues exceedingly healthy. This was, we believe, the first employment of the higher sulphides of calcium as a vehicle for the application of sulphur to the stems and foliage of the diseased vines. Specimens were exhibited from vines which in 1851 were covered with disease, and which have since the autumn of that year received no further treatment. The vines in the immediate neighbourhood, and adjoining one of the houses, are covered with disease, but, notwithstanding their close proximity, no indication of the disease has at present been detected in either of the three houses.

'*On the effect of Sulphate of Lime upon Vegetable Substances*,' by Chevalier Claussen.—About six weeks since I was engaged in making various experiments on the effect of Sulphate of lime upon vegetable substances. A portion of the substances then used by me was thrown carelessly aside, and upon returning to my experiments about a fortnight afterwards, I was surprised that the decomposition had not taken place in those portions of the vegetables which had been subjected to the action of the sulphate, while those which had not been so treated were completely decayed. Among the articles experimented upon were a number of potatoes, each of which was affected by the prevalent disease; some of these remain sound to the present day, the others have some time since completely rotted away. Subsequently I procured some more potatoes, and also some beet-roots, the former being, as far as I could judge, all diseased. I divided the potatoes into three portions. One lot I placed in a vessel with a weak solution of sulphuric acid, and from thence I placed them in a solution of weak lime-water. In the second lot the process was reversed, that is to say the potatoes were first placed in the lime-water, and then in the acid. The third lot was left untouched. Ten days afterwards I examined the potatoes, those whichhad not been treated with the sulphate were rapidly decaying,—those which had been first placed in the solution of lime and then in the acid were more nearly decomposed,—while those which had been treated in the mode first described remained as sound as when first taken in hand. Upon being cut open the diseased part of the potatoes was found to have spread internally, and the flavour of root was in no degree affected by the application of the process nor do I think that its germinating power was injured by the effect of the sulphate. The effects upon the beet roots was similar to that produced upon the potato, and which would seem to be somewhat analagous to that of galanizing metals, viz: protecting the substances from the effect of atmospheric agencies. I may add, that muriatic and other acids have been employed by me on other occasions with equal success, the only agents required appearing to be those which will most readily produce a sulphate in contact with the substances required to be preserved. As at present it does not appear that any means can be successfully adopted to prevent the potato from becoming diseased while in the ground and arriving at maturity, it would certainly be of immense advantage if anything could be discovered by the use of which the roots when taken up could be prevented from that absolute decay and irreparable loss to which potatoes affected by the disease are liable. The results which I have described seem to me to point to the possibility of arresting this loss. How far the plan suggested may be practicable or applicable upon a large scale, my present very pressing and numerous engagements have hitherto prevented me from ascertaining. I do not think that any insuperable difficulty exists with respect to the application of the process. The acid employed by me was very weak, about one part to two hundred of water; the lime water was about the consistency of milk. The materials are not, therefore, expensive; and when the value of the crop to be saved is taken into consideration, it would be a matter well worthy of being tested by some of those extensive growers of potatoes in the county in which the British Association is now holding its sittings. For my own part, I should be most happy if any suggestion of mine had merely been the instrument of directing the attention of scientific men to the subject of the possibility of preserving from total destruction a vegetable so valuable and so indispensable as the potato.

'*The results of the Census of Great Britain in* 1851, *with a description of the machinery and processes employed to obtain the Returns*,' by E. Cheshire.—The author commenced by reciting the onerous duties of Registrar General. The objects of the census were explained, and the machinery employed to take it. Great Britain was apportioned into 38,740 enumeration districts, and to each of them a duly qualified enumerator was appointed. The author illustrated the extent of this army of enumerators, and the labour of engaging their services on the same day, by stating that it would take 13½ hours to count them, at the rate of one a second, and that the army recently encamped at Chobham would not have suffered to enumerate a *fourth* of the population of Great Britain. The boundaries of the enumeration districts, and the duties of the enumerators, were defined. The number of householders schedules forwarded from the Census Office was 7 000-000, weighing 40 tons. The processes employed to enumerate persons sleeping in barns, tents and the open air, and in vessels, were severally explained; also the means by which the numbers of British subjects in foreign States were obtained. The precautions taken to ecure accurate returns were recited; they involved the final process of a minute examination and totalling, at the Census Office, of 20 millions of entries, contained on upwards of 1¼ millions of pages of the enumerators' books. The latter were upwards of 38,000 in number. The boundaries of the fourteen registration divisions were traced, and the plan of publication of the census was explained. The number of persons absent from Great Britain on the night of the 30th of March, was nearly 200.000:—viz. army, navy, and merchant service, 162,490; and British subjects resident and travelling in foreign countries, 33,775. The various causes of displacements of the population were recited; and the general movement of the population on the occasion of the Great Exhibition was alluded to.† The number of *visits* to the Crystal Palace were 6,039,195; and the number of people who visited it was 2,000,000, nevertheless the landing of only 65,233 aliens were reported in the year. The population of Great Britain in1851 is subjoined.

	Males.	Females.	Total
England	8,281,734	8,640.154	16,921,888
Scotland	1,375,479	1,513,263	2,888,742
Wales	499,491	506,230	1,005.721
Islands	66,854	76,272	143,126
Army, Navy and Merchant Service.	162,490	.....	162,490
Total	10.386.048	10,735.919	21,121.967

The census illustrated this 21,000,000 of people by an allusion to the Great Exhibition. On one or two occasions 100,000 visited the Crystal Palace in a single day, consequently 211 days of such a living stream would represent the number of the British population Another way of realizing 21,000.000 of people was arrived at by considering their numbers in relation to space; allowing a square yard