treating of kerosene emulsions; and we are glad to see considerable space devoted to 'words of caution and advice' as to the dangers attending their use: for it can hardly be said that the discussions of the kerosene question in these reports have been heretofore conducted "in the spirit of an investigator, and not in the spirit of an advocate."

The experiments with kerosene, and the invention of devices for applying insecticides, have been the characteristic features of the work of the bureau during the past four years. This work has been of great importance; but it is hard to see on what grounds the late commissioner of agriculture claimed that "the chief remedies and insecticide appliances now quite generally employed with satisfaction, and constantly discussed and recommended in the agricultural press, have originated during my administration of the department" (p. 13).

The successful introduction of Apanteles glomeratus, a parasite of the imported cabbage-worm, is one of the most practical results of the work of the bureau; and the working-out of the life-history of the cranberry-fruit worm is also important. The article by Mr. Hubbard, on the rust of the orange, is very complete, except that nothing is said to lead the reader to think that any thing has ever been published before concerning this disease. This is the more surprising; since we find, that, although the mite which is supposed to cause the rust is carefully figured, the name given to it by Ashmead five years ago is nowhere used in the report. The creature is referred to as simply 'the rust-mite,' or as 'the mite.'

The illustrations are not so good as we have learned to expect in these reports. Of the figures on the ten plates, nearly one-half are reproductions, and the original figures are nearly all photo-engravings. The photo-engraving processes are a great boon to impecunious investigators who cannot afford to employ engravers; but in a small report, which is almost the only visible result of the expenditure of a vast sum of money, we have a right to look for something better. It is due to the artist, however, to say that the new figures bear inherent evidence of truthfulness.

In looking at the report as a whole, we find much in it of value, but still not so much as might fairly be expected when we consider the large number of entomologists employed (we think, fifteen), and the size of the appropriation made to the bureau (nearly $30,000 for the year ending June, 1884). It is true that the entomologist complains that the work of the bureau has outgrown its present means of putting results before the public; but this complaint would have more force if he were more economical of the space at his disposal. If the bureau has accumulated large additions to knowledge which are of great interest to the agriculturists of the country, why devote what is more than one-fourth of the report to an article on cabbage-insects, the greater part of which is a compilation from sources which are easy of access? or why devote seven pages to republishing an address on 'General truths in applied entomology'?

NOTES AND NEWS.

AT a meeting of the American society for psychical research held in Boston, June 4, a report was made by the committee on thought-transference which covered a discussion of the results of the experiments upon guessing digits and the colors of cards, which were described in a circular issued by the society during the winter. A large number of returns were received, but no evidence was obtained of the existence of thought-transference among ordinary persons for such matters as the value of a digit or the color of a card. Prof. E. C. Pickering of the Harvard-college observatory also presented a discussion of the observations taken at the observatory in the revision of the star catalogues, — observations in which it was supposed that some thought-transference might take place, as the recorder knew the magnitude of each star as given in the Durchmusterung before he received the observer's estimate. If thought-transference existed, this fact might have an influence upon the observer's mind; but no evidence of this influence was found in a discussion of some ten thousand observations. One of the members of the society has met with some success in the reproduction of drawings after the plan of the English society. The committee on mediumistic phenomena made a brief report, stating that they had visited a number of mediums, and had arranged several private *séances* on their own terms, but had met with nothing satisfactory; they will, of course, continue their work, as will the other committees of the society.

— Reports are received from the Pacific coast of unusual damage by insects destructive to crops. Locusts, presumably Camnula pellucida, are just now very destructive in the unfledged condition in some ten counties of California, especially in the San-Joaquin valley. The genuine Hessian-fly is also doing much damage to the grain districts embraced in a line drawn from Vallejo in Solano county to Benecia, thence to Suisun, thence to Napa City, and back to Vallejo; also in parts of Sonoma county.

— The *Athenaeum* states that the Russian traveller Piassetsky, who accompanied Col. Sosnoffsky on his journey through China and Mongolia in 1872, and a translation of whose travels was published last year by Messrs. Chapman & Hall, is about to set out on

a second journey to China. The Russian papers announce that he recently showed the drawings and paintings, made during his earlier tour, to the emperor and empress, who expressed themselves much interested in the prospects of his second journey of exploration. Piassetsky owed his escape from several unpleasant predicaments, during his former travels through the Middle Kingdom, to his skill as a draughtsman; and it is hoped by his compatriots that he will be able to turn this advantage to better account, now that he can follow his own course without the interference of a superior officer like Col. Sosnoffsky, with whom, on the last occasion, he continually disagreed.

— At the annual meeting of the Iron and steel institute in London, Mr. Andrew Carnegie of Pittsburgh contributed a paper on natural gas-fuel and its application to manufacturing purposes, the information being much the same as that contained in his recent article in *Macmillan*. In the discussion which followed, Mr. J. H. Bell said there was a possibility of Cleveland, Eng., competing with Pennsylvania in the matter of natural gas, as in other matters, as the salt-beds evolved a certain quantity of gas, and, if the borings were continued several hundred feet farther, would probably give more. At the last day's meeting, Dr. Herman Wedding of Berlin contributed a paper on the properties of malleable iron, in which he said that microscopical investigation had led him to modify the explanation of welding he had given some years ago. He had now come to the conclusion that the strength of a finished piece of iron depends on the sectional area of the mass of iron it contains. From the total sectional area of a piece of weld iron, the slag inclusions, and in the case of ingot iron the blow-holes, must be deducted. This calculation is decidedly in favor of the ingot iron, though he pointed out it can only be superficially effected, even with our present knowledge of microscopy.

— A valuable illustrated note on the Huron (Dakota) tornado of Aug. 28, 1884, has just been issued by the signal-service: it is the work of Sergeant S. W. Glenn of the signal-corps. Imagine, the author says, a vast treeless plain, void of hill or dale, and a sultry atmosphere beneath a sky unobscured save by small drifting cumulus clouds and a narrow band of stratus cloud in the north-east. Suddenly a commotion is observed in the cumulus clouds which have piled up in a woolly mass in the north, as though checked by some invisible barrier separating them from the horizon by a strip of clear sky. Then there is a rapid and confused whirling: the centre of the mass drops down bowl-shaped, and appears as if making futile efforts to touch the earth. At the same time, a conical cloud of dust is seen to accumulate on the ground, and acquire a rotary motion. With the swiftness of thought, the upper cloud drops a considerable distance downward, and spins out a white, ribbon-like line towards the ground. The connection between the earth and cloud being established, it remains stationary for a moment, apparently gathering strength before starting on its career of destruction. Then it moves rapidly over the plain, destroying every thing in its path. A number of cattle and horses were taken from a herd, lifted bodily high in the air, and churned together in a living mass; thirty steers and four horses were killed, and more were wounded; most of the beasts appeared to have their lower jaws dislocated. The tornado crossed the Dakota River, taking up the water so suddenly as to leave the bottom exposed for an instant: the water was carried to a great height, and was not seen to fall; but heavy rain, with some hail, occurred twelve or more miles to one side of the track. Mr. Glenn is of the opinion that the centre of the tornado was a nearly complete vacuum, and that the governing factor of the storm was electricity; but he does not state how electricity could produce or maintain the vacuum, and he gives too brief consideration to the dynamic effects of the whirling air at the centre of the tornado funnel.

— A party of five persons — consisting of Drs. E. G. Gardiner and H. M. Buck of Boston; Mr. G. H. Barton, assistant at the Massachusetts institute of technology; and Messrs. Bartlett and Burlingham of the junior class of the institute — has just started on a summer's expedition, under Prof. A. Hyatt, to the west coast of Newfoundland for zoölogical and geological explorations. The party sailed in the Arethusa, a small schooner belonging to Professor Hyatt, which he has used in connection with the summer school at Annisquam. Professor Hyatt left some weeks ago for St. John, N.F., where he has been visiting the museum, and securing charts and a pilot. He will join the party at Cape Breton.

— During the years 1870 to 1879, the meridian circle of the Harvard college observatory was largely employed in the revision of the Durchmusterung for the zone between the parallels of declination at +50° and +55°. The star-places employed as points of reference in the work were taken from the list given in publication xiv. of the *Astronomische gesellschaft*, and various stars were also observed for purposes not connected with the revision proper. In a quarto pamphlet of nearly one hundred pages, and extracted from the forthcoming volume xv. of the annals of the observatory, Prof. W. A. Rogers, who has himself made nearly all of the observations, and has had charge of their reduction and publication, makes the results of the entire work immediately available in the form of a catalogue of the right ascensions and declinations of 1,213 stars. The catalogue proper is preceded by the annual results for the fundamental stars, while the data of the catalogue itself are derived from a discussion of the results obtained during the whole period covered by the observations.

— M. K. Olzewski communicated to the French Académie des sciences, on the 6th of April, a paper on the liquefaction and solidification of formine and of nitric acid. Cailletet stated that he had first made known the procedure for the liquefaction of these gases and their use in a condensed form for obtaining the liquefaction of oxygen. Olzewski, by preparing products free from acetone and hydrogen, has succeeded in obtaining a white, snow-like mass.