note that probably two-thirds were aided by co-operative building and loan associations. Dr. Shaw attributes this remarkable success to co-operation; for, so far as he is aware, no cooper outside of the co-operative shops has similarly prospered.

The history of the other six co-operative barrel companies given in this chapter is in the main similar to that first noted.

From the experience of these companies, Dr. Shaw concludes that they are superior in stability to the non-co-operative shops; that co-operators as proprietors and capitalists have a manifest advantage in competition, for, if necessary, they can dispense with profits upon capital, and rely for support upon their wages as workingmen.

The lessons learned from the experience of these coopers can be applied in other branches of co-operation, especially where piece-work is possible, or where labor has greater relative importance than capital in production.

The account of the Co-operative agricultural colony, established near Minneapolis in April, 1886, contains many valuable suggestions; and, if this colony meets with the success indicated by present prospects, it will doubtless lead to the establishment of other co-operative colonies. A co-operative agricultural colony is apt to suggest the idea of a communistic body like the Shakers; and to correct this notion Dr. Shaw thus distinguishes them: "Communism and co-operation are antipodal in principle. Communism denies the right of private property. Co-operation proposes to enable the destitute to acquire private property. Communism usually asserts control over family relations, and it sacrifices personal liberty. Co-operation adds to the liberty of the individual because it enables him to 'pay the price of his industrial freedom;' and, as I have shown in the case of the coopers, it supplies the conditions that are most favorable to the family institution."

In giving an account of co-operative profit-sharing in the Pillsbury mills, he says, "From the employers' stand-point, I have Mr. Pillsbury's assurance that it pays." It brings about pleasant relations between employer and employee, and works to mutual advantage. The system is not, however, without its inconveniences and petty annoyances.

The Minneapolis co-operative mercantile company was established by the co-operative coopers in 1885, and its success has been very satisfactory. There is no reason why this form of co-operation which has proved so advantageous to workingmen in England should not have like results in this country.

In addition to those co-operative industries mentioned above, Minneapolis has a co-operative laundry, a co-operative painters' association, co-operative building associations, and other co-operative enterprises whose forms of organization are admirably sketched in this monograph.

Dr. Shaw attributes the fresh impulse now being manifested among workingmen to join in co-operative effort chiefly to the growth and activity of the knights of labor.

Co-operation is not prescribed as a panacea for all the present ills of labor. The author recognizes that there must be improvement along many lines, but holds that within certain limits co-operation has not only immediate applicability, but also great remedial virtue. The moral effects are reckoned its highest success. It makes men provident, temperate, and self-reliant. Co-operation is not a religion, and calls for no renunciations. It is merely a question of business advantage, and those engaged in it would not hesitate to give up the system if their condition would be bettered thereby.

This contribution to the labor literature of the day will doubtless be widely read, and lead to good results.

---

## *PARIS LETTER.*

THE very sad and unexpected news of Paul Bert's death reached us yesterday, exciting much surprise, as it was scarcely known that he was ill. As a politician, M. Bert was a man of passionately strong opinions; and his anti-clerical efforts, which soon became an anti-religious warfare, made him many bitter enemies. As to his work in Tonquin, it can hardly be appreciated, as it had only begun. As a scientist, M. Bert had already been virtually dead many years. He had almost entirely given up work of a physiological nature, his attention being given altogether to politics. I have had the pleasure of meeting M. Bert two or three times in his laboratory, and of listening to some of his conversations with his assistants, while he was discussing new experiments and explaining the methods that ought to be followed; and, as he spoke, new ideas appeared to be constantly coming. With a trained and intelligent corps of assistants, he would have done great work. His head was ever full of new ideas, of ingenious methods, but he required assistants to catch the ideas as they came, and to work according to his directions.

At a recent meeting of the Academy of sciences, M. Pasteur read an interesting paper on the progress of anti-hydrophobic inoculation. Up to the 31st of October, 2,490 persons had been treated at

his laboratory after having been bitten by rabid or presumably rabid animals. Of this number, 1,700 were natives of France, among whom the resulting deaths were ten, — 1 in 170. The number of cases of hydrophobia recorded in the Paris hospitals is usually ten or twelve per annum; during the year ending November, 1885, it was twenty-one. Since that date, only three cases have occurred. One was a person who had been treated by M. Pasteur, while two were persons who had not been so treated. Upon the whole, the mortality among those treated was shown to be much less than among those not treated. The most important point in M. Pasteur's paper is, that the treatment must not be the same in all cases; that where the wounds inflicted are of a serious nature, in the face especially, stronger doses are required. Such was the treatment in the case of the nineteen Russians, who, it will be remembered, were sent here from Smolensk after having been severely bitten by a rabid wolf. One died during treatment, and two others a few days afterward. Pasteur, fearing for the safety of the others, treated them anew, ending with very strong doses, which he believes is the reason for their survival. In cases where there are severe wounds of the head or face, he now proceeds as follows: on the first day he uses medulla virus 12 days old at 11 o'clock, 10 days old at 4, and 8 days old at 9; on the second day, at the same hours, he uses medulla virus of 6, 4, and 2 days respectively; on the third day, medulla virus of 1 day. The treatment on the fourth day is the same as on the first, that on the fifth the same as on the second, and the sixth as on the third; on the seventh he uses a 4-day medulla, on the eighth a 3-day, on the ninth a 2-day, and on the tenth a 1-day medulla. The process may be repeated two or three times. M. Pasteur has used this method some two months in cases such as those mentioned, with good results. Part of the paper was devoted to the effect of anti-hydrophobic treatment of dogs after inoculation, the results in dogs being exactly the same as in man, experiments having shown that prompt action and high doses are necessary, just as in the case of hydrophobia among human beings. The paper was heartily applauded by the members of the academy.

M. Loret of Lyons, in the course of his studies on ancient Egyptian funeral rites, has given some attention to the perfumes then in use; and by means of his botanical knowledge, aided by some inscriptions in ancient laboratories, he has been able to discover the ingredients composing some of them, such as 'kyphi' and 'tasi,' which were used in Greece and Rome after the conquest of Egypt. These he has reproduced from the old Egyptian formulas, 'tasi' being compounded of storax, benzoin, myrrh, and other resins, while 'kyphi' is made from roots, leaves, and seeds of different plants.

A new treatment of phthisis is proposed by Dr. Berjon of Lyons, entirely different from the bacteriological treatment recently proposed by Cantani, and unsuccessfully tried by several Italian and Spanish physicians. The new treatment is based on the fact, demonstrated by Cl. Bernard, that some gases, such as sulphuretted hydrogen, which cannot be inhaled without danger, can be introduced into the digestive tract through the rectum, passing off through the lungs without inconvenience after being absorbed by the mucous membrane of the rectum and passed through the circulatory system. Dr. Berjon uses carbonic acid mixed with sulphydric acid. Tuberculous patients have shown much improvement under this treatment, though the reason for it is not obvious, and M. Berjon does not explain why he uses the gases named rather than others. Under this new treatment, it seems that after a time the purulent discharge ceases, nocturnal sweating disappears, there is a marked increase in weight, but the bacilli are still present. Dr. Berjon's experiments are so very recent, that their results cannot yet be judged. Those who desire full information upon this subject are referred to the *Semaine médicale* of July 14 and Oct. 20, 1886. The same method has been tried in cases of asthma, and with good results. The reason for this is enigmatical, but the subject is well worth investigation.

Dr. Guilbeau, a blind professor in the Institut national for the blind, has conceived and put into execution the excellent idea of establishing a museum to contain samples or specimens of all articles specially devised for the use of the blind. He has already made quite a collection. This museum will contain much to interest not only those deprived of sight, but the general public as well, as it will present in a graphic manner a history of the efforts made to increase the comfort and the knowledge of the blind. The display of the different kinds of letters invented for reading by touch is very complete, containing all varieties introduced since Haüy's first large letters in relief and Braille's improvement, up to the latest methods.

Some time ago, M. Moissan, a young chemist, had a letter read before the Academy of sciences, announcing that he had been able to isolate from hydrofluoric acid a new substance possessing very peculiar qualities, and which he believed to be fluor. A committee was appointed, and at the meeting of the academy, on Monday last, I heard

part of M. Delray's report upon the subject. After having recalled past experiments in that direction, M. Delray stated that M. Moissan's method consisted in submitting hydrofluoric anhydric acid to the action of very strong electrical influence and intense cold (from — 23° to — 51° C.). After two or three hours of this treatment, a gas is obtained which it does not seem possible can be any thing but fluor.

The ancient Sorbonne re-opened its venerable doors some days ago; M. Lavisse, professor of modern history in the literary faculty, delivering the opening address. A new chair, that of physical geography, has been created, which will be filled by M. Vélain, a geologist.

The Musée du Louvre some time ago received several fine specimens of Persian art of very great antiquity. They consist of a series of warriors, in relief, natural size, of enamelled and colored bricks. They come from the palace of Darius, in Susa, having been brought thence by M. and Mme. Dieulafoy. These specimens of Persian art are the first that have been found, and have excited much admiration here. Unfortunately the venerable warriors are not as well suited by the climate of Paris as by that of the Susian province, the dampness of the air disagreeing with them; and, to prevent the crumbling of these remains of the great Darius's palace, they are to be submitted to a preservative process, — heating to a high temperature after having been covered with spermaceti. The operation will be an extensive one, as each brick must be treated separately.

Among the books recently published, I would call special attention to Vulpian's second volume on diseases of the spinal cord, which came from the press two days ago. In this excellent work the able physiologist makes known all that his clinical experience and physiological experiments have taught him these many years. A good book, also, is that of Alex. Peyer: 'Atlas de microscopie clinique.' It is a collection of a great number of figures relating to pathological substances and morbid products. Each plate is accompanied by a lengthy explanation. This book will prove very useful to the practitioner as well as to the student, and is gotten up in very handsome style. V.

Paris, Nov. 13.

## *NOTES AND NEWS.*

THE annual report of the surgeon-general of the navy, Francis M. Gunnell, says that 8,429 patients in the navy were treated during the year, with 52 deaths, — less than 1 to 162. He complains that the navy has not sufficient inducements in rank and pay for young physicians to become medical officers, while the army has many applicants. An appropriation is urged for a yellow-fever hospital at Widow's Island, near Portsmouth, N.H.

— Commander Schley has received the gold chronometer voted to him by the Maryland legislature as a testimonial in consideration of his bravery and efficiency in the rescue of Lieutenant Greely.

— Gas has recently been discovered at several places in Indiana in supposed paying quantities. The following places are reported to have wells which have been sunk to a successful end: Eaton and Muncie in Delaware county, and Kokomo in Howard county. Prospecting is being carried on in most of the larger towns of northern Indiana.

— Captain Anderson of the Norwegian bark Hebe reports to the U. S. hydrographic office that on Aug. 24, 1886, while in the Indian Ocean (11° 52′ south, 90° 17′ east), a tremendous sea passed the vessel, looking as if it had come from shoal water. The sea, just before and after the passage of the wave, was perfectly smooth; light breeze at the time from the south-east. No soundings were taken. The charts in this locality give no soundings, and the captain is of the opinion that the wave may have been due to an earthquake.

— The French ministers of foreign affairs and of public instruction will shortly place before the Chamber of deputies a *projet de loi* relating to literary and artistic copyright, in order to carry out the conclusions of the Berne international convention.

— The president and council of the Royal society have awarded the Copley medal to Franz Ernest Neumann of Königsberg, for his researches in theoretical optics and electro-dynamics, and the Davy medal to Jean Charles Galissard de Marignse of Geneva for his researches on atomic weights. Prof. S. P. Langley of Alleghany City was awarded the Rumford medal for his researches on the spectrum by means of the bolometer. At the same time Francis Galton, F.R.S., and Prof. Guthrie Tait were nominated for the royal medals, the former eminent for his statistical inquiries into biological phenomena, and the latter for his various mathematical and physical researches.

— In a pneumatic street-car system for which a patent has recently been granted, air is compressed at a central station, and distributed through pipes to reservoirs, situated between the tracks and below the street surface, at points on the road where supplies of compressed air for the pneumatic locomotives are needed. Tanks on the locomotive hold sufficient compressed air to propel it from