

Act 1891 designates as the "owner" the person who, if the premises were let at a rack rate would receive that rack rent, and that as in the present case the premises were not let at a rack rent, the only person whose interest in the premises placed him in a position to receive a rack rent was the assignee of the sublease, and that he therefore was the owner, and the appellants were accordingly not liable.

The Court, therefore, reversed the decision of the Court of Quarter Sessions, and quashed the conviction by the magistrate.

## RECENT SANITARY PROGRESS IN PARIS.

By T. M. LEGGE, M.D., D.P.H.

ON the 10th July last was passed the law relating to the sanitation of Paris, which those who are interested in public health matters there have been fighting for so ardently and so long. The germ of the idea of abolishing the cesspools and draining all houses in Paris directly into the sewers, with the subsequent treatment of the sewage by irrigation, originated in the mind of M. Durand-Claye, and it is a pathetic fact, that having consecrated his life to the realisation of this project, he should have died in 1888, at the age of forty-six, before witnessing its consummation. And therefore it was fitting and entirely consonant with the instinctive feeling of homage to its great men, so characteristic of the French nation, that on the day after the Bill passed the Chamber of Deputies, his statue should have been unveiled in the plains of Gennevilliers and his eulogy uttered by M.M. Trélat and Poubelle.

By this law the City of Paris is empowered to borrow a sum of £4,500,000 to complete the sanitation of the city, under which designation three chief points are included: (1) The works necessary for conveying and raising the sewage to irrigation fields, and the purchasing and laying out of these lands; (2) the finishing of the network of sewers, improving the existing ones, and construction of new collectors, and (3) the completion of the water supply by bringing the waters of the Loing and Lunain to Paris. For the first of these there is set aside £1,232,000, for the second, £1,400,000, and for the third £2,000,000. In order to cover some of this large expenditure and to pay the working expenses, it is made compulsory on everyone who can, to drain into the existing sewers within three years, and an annual tax is to be levied on every house for so doing, the tax varying with the rent of the house. Clause 6 stipulates that at the end of five years the whole of the sewage shall be treated by irrigation, and none be passed directly into the Seine.

More recently, dated August 8th, 1894, there has been issued a "Règlement relatif à l'assainissement de Paris," which answers all the purposes of a bye-

law, setting forth the conditions that must be fulfilled in the sanitary appliances, the materials of which they must be made, their dimensions, etc. In the main these follow very closely those laid down in the model bye-laws of the Local Government Board as regards disconnection of the drain from the sewer, ventilation of the soil pipe, the trapping of all house drains, and the necessity of their opening as well as the rain water pipes over a trapped gully before entering the sewer. No reference appears to be made to a point on which we lay some stress, namely, that the soil pipe should be placed outside the house.

The enormity of the task that the City of Paris has undertaken will be best understood when it is remembered that at present there are not more than 10,000 houses which drain directly into the sewers, while 64,000 have cesspools, generally immediately below the basement, varying from 10½ to 40 cubic yards in capacity. In addition to this there are some 35,000 "tinettes filtrantes" in which the solid matters are retained, the liquids passing into the sewers, and 16,000 "tonneaux mobiles." But at present as much as £400,000 are expended annually in the exceedingly unpleasant task of emptying these cesspools, etc., and under the new system this sum will be reduced to £320,000.

Already, for several years, a portion of the sewage of Paris has been treated on the 1,850 acres which are used as a sewage farm at Gennevilliers, and here, the soil being a suitable one, the results have been exceedingly successful, the 20,000,000 bacteria per c.c. in the sewage having been reduced to an average of 7,500 in the effluent. The City has purchased, or is about to purchase, 9,000 acres more, principally in the neighbourhood of Achères, and a considerable portion of these it is expected will next spring have been laid out, and their irrigation rendered feasible.

It cannot be denied that the plan has met with a considerable amount of opposition, and strenuous efforts have been made to attribute to the farm at Gennevilliers the last outbreak of cholera in 1892. It is true that the districts chiefly affected lay to the north-west of Paris, where lies the sewage farm, but here, too, is the place where over 300,000 cubic yards of untreated sewage are discharged every day directly into the Seine. And, it will be hardly credited, that within two miles of this, the river emitting the foulest gases by the way, there were two intakes of water, for domestic purposes only, so it was affirmed, but occasionally, too, as it came out in the enquiry, serving to supplement the ordinary drinking supply when this ran short. The result of that enquiry by M.M. Proust, Netter, and Thoinot was to add yet another to the long series of examples of water-borne cholera epidemics. At Aubervilliers, for instance, the ordinary supply from the Marne

running short one day, polluted Seine water was allowed to enter the mains, and immediately cholera became epidemic. Almost the same thing was repeated at Argenteuil, another of the towns most heavily struck, where the disease broke out most severely when Seine water was substituted for that of the Oise.

As is well known the water supply of Paris is on the double system, spring water being used for domestic and drinking purposes, river water for public and industrial, this idea having been developed by the engineer Bertrand, working in conjunction with Hausmann, Prefect of the Seine. At present the supply of the former from the three sources of the Vanne, the Dhuis, and the Avre is about 9,000,000 cubic feet a day, giving on an average about twenty-two gallons per head. It is estimated that the new sources it is proposed to tap, those of the Loing and Lunain, will yield about another million and a-half cubic feet per day. This spring water undergoes no filtration, and it must have come as rather a shock to most Parisians to hear that in the spring of this year, the waters of the Vanne, which had been deemed irreproachable hitherto, were laid open to the suspicion of being the means of conveying typhoid fever germs. Certain it is that in the somewhat sharp epidemic which broke out in February and March last, the incidence of the disease fell nearly twice as heavily on the arrondissements supplied from this source as upon the others. And to inculcate it still more, the town of Sens, also deriving a part of its water supply from the Vanne, had its typhoid fever death-rate markedly increased almost synchronously with that of Paris. Until this spring it had been a matter for congratulation in Paris that the mortality from typhoid fever had been diminishing for ten years, and one cannot but hope that this last epidemic will lead to the gathering grounds of these streams being very carefully watched.

#### COMPULSORY NOTIFICATION OF EPIDEMIC DISEASES.

The second great point in the sanitary progress of Paris, or rather of France generally, is to be found in the law passed in November, 1892, dealing with the practice of medicine; and in it what is of the greatest moment for the public health is clause 15, which renders the notification of every case of infectious disease obligatory, as soon as the diagnosis is completed. The persons charged with this duty are the doctor in attendance, the "officier de santé," or the midwife, as the case may be. In the law itself the list of diseases is not specified, an omission which has since been filled up by the issue of a ministerial decree including the following:—Typhoid fever, typhus, small-pox, scarlatina, sweating fever, cholera and cholera-like diseases, plague, yellow fever, dysentery, puerperal fever, and ophthalmia neonatorum. It will be noticed that the list

differs in some points from that adopted in this country, the chief points being the omission of erysipelas and the insertion of dysentery, sweating fever, and ophthalmia neonatorum. The two former still occur at times in an epidemic form in various parts of France, and the inclusion of the latter was doubtless prompted by the disastrous results arising from neglect in its treatment; but, though its notification by a midwife seems desirable enough, there hardly appears the same necessity for a medical man to have to notify it.

Where the application of this law is, however, most open to criticism, is the fact that, there being no medical officers of health in France, the notification has to be made to the Mayor of the Commune and to the Sub-Prefect of the district. It can hardly be expected that either of these will have the necessary knowledge to carry out with discretion and conscientiousness matters requiring very delicate handling, and there seems a distinct danger that in some cases a too excessive zeal on the part of the mayor may lead to great friction between himself, the medical practitioners, and general public, and in others that, beyond the mere filing of the notification returns, the Act will become a dead letter. It seems essential that to reap the full benefit of the enactment, the mayor must have some competent medical assistant in the matter, and one does not see how this is to be got without constituting some public health service. It has been the bane of this service hitherto in France that everything has had to be done through the police, and not on its own initiative.

Some opposition was made to the law, the principal objection being that the professional secret would be divulged. This was not allowed to outweigh the manifold benefits to the general public that were to be attained, but a point was conceded to it, in that, in the case of puerperal fever, notification was not demanded where the woman expressly wished the fact, on private grounds, to be concealed.

To the recent epidemic of typhus fever in Paris and various towns to the north and north-west of the city, a short reference was made in the September number of PUBLIC HEALTH. The source of contagion in this case was almost exclusively confined to vagrants and those inhabiting common lodging-houses, and the epidemic, although it seemed to have been stamped out at the end of 1893, broke out again in a less violent form in 1894. In Paris alone, from January 1st to July 15th, there have been about fifty cases, with about forty-five per cent. of deaths. That the disease has not run riot more seriously must be put down to the exertions of the Service des Etuves Municipales, presided over by M. le Dr. A. J. Martin, who, as "Inspecteur de l'assainissement et de la salubrité de l'habitation" at Paris, fills a position somewhat analogous to that of a medical officer of health at home. At the recent Congress at Buda-Pesth, Dr. Martin presented a very

interesting illustrated paper detailing the *modus operandi* of the disinfecting stations. Hitherto this service has been entirely gratuitous, but now, as the expense of its maintenance is so great, a tax is to be imposed in which flats taxed for a rent between £40 and £86 will be charged 10 fr., and increasing gradually with the higher rents. But disinfection will continue to be gratuitous on flats whose rent is less than £32.

In July, 1893, the Prefect of the Seine passed a regulation to the effect that he had formed, in connection with the "Direction des Affaires Municipales," a section on house sanitation which will unite the scattered services dealing with this subject. The effect of this will be undoubtedly to expedite and render more easy measures affecting the housing of the working classes.

#### ANALYTICAL NOTES.

J. LEHMANN and W. Hempel, in a recent paper on milk analysis, show, from a number of analyses, the association of ash with casein. The casein of cow's milk contains 7.2 per cent. of ash, consisting of CaO, 49.5; MgO, 2.4; P<sub>2</sub>O<sub>5</sub>, 47.0; and SO<sub>3</sub>, 1.06 per cent. The elementary composition of casein is given as: C 50.86; H 6.72; N 14.63; P 0.81; S 0.72; ash, 6.47 per cent. There is more sulphur (1.09 per cent.) in the casein of woman's milk, and less ash (3.2 per cent.). The average composition of the respective milks is given thus:—

	Cows' Milk.		Human Milk.
Casein ...	3.0		1.2
Albumin ...	0.3		0.5
Fat ...	3.5	Total	3.8
Lactose...	4.5	Solids.	6.0
Ash ...	0.7	12.0	0.2
Water ...	88.0		88.5
		Total	11.7
		Solids,	

K. BAISCH has identified very completely two carbohydrates in normal urine. They are glucose and a dextrin-like substance (animal gum). The quantity of glucose averages 0.005 per cent., and of total carbohydrate calculated as glucose about twice that amount. A small quantity of a third reducing carbo-hydrate was found, but was not however satisfactorily identified.

It is well known that the liver continues, after removal from the body, to show, while the vitality of the cells lasts, the same chemical activity as when it is within the body—as, for instance, glycogen is converted into sugar. The researches of C. Richet demonstrates that the same is also true with regard to urea; and he advances the opinion that, like the formation of sugar, it is due to the action of a ferment.

THE action of vegetable ferments—amylolytic, proteolytic, and others—has been investigated by N. Weiski, with a view of proving whether these assist the digestion in the animal organism and

increase the nutritive value of the food. Rabbits were fed on oats, as a type of raw vegetable, for some period, and for another oats, the vegetable ferment of which had been destroyed by heat. The intake and output of material were measured in the usual way, and the results were practically the same during both periods.

SIEGFRIED has found that the estimation of oxygen in blood by sodium hyposulphite is not reliable, inasmuch that by taking a sample of blood so treated, he is, by means of a vacuum pump, able to extract further oxygen. The blood which has been deprived of this part of its oxygen shows no trace of its oxyhæmoglobin bands with the spectroscope, and he calls this remaining compound pseudo-hæmoglobin. Schützenberger has repeated Siegfried's experiments with modified apparatus, and confirms his results in the main; but also shows that the amount of oxygen removable by the vacuum method to vary considerably in different animals, and in the same animals under different conditions.

H. D. PAXTON has devised a method for the determination of glycerol in wine, somewhat similar to Adam's paper-coil method for milk-fat estimation. He takes 10 c.c. of the wine to be examined after treatment with slaked lime, and carefully transfers it to a long piece of filter paper; dries this at a low temperature, then extracts it with absolute alcohol in a Loxhlet apparatus; evaporates the extract in a flask; re-dissolves the residue in ether alcohol filters, evaporates again and weighs the dried residue. He claims that there is less loss of glycerol than by any other method where evaporation is employed, while the glycerol extracted is quite pure.

ONE of the most rapid and accurate of what are known as the centrifugal methods for the estimation of fat in milk is an apparatus called Dr. Gerber's Acid Butyrometer, and which is now obtainable in this country. The machine consists of a circular plate about 20 inches diameter, which rotates on a spindle horizontally on ball bearings. The plate has recesses for eight or twenty-four test glasses. These are tubes 8 inches long, of about 25 c.c. capacity, having graduated necks closed at the end. The procedure of an estimation is as follows:—11 c.c. of sulphuric acid are pipetted into a tube. The acid must be of a specific gravity of from 1.820 to 1.825; this is essential, otherwise the result is unsatisfactory. 11 c.c. of the milk are now added, and finally 1 c.c. of amylic alcohol. The tube is now closed with an indiarubber stopper, shaken and placed in the machine, which is rotated at a high velocity by winding a cord round the spindle and pulling sharply. When it has run two or three minutes the machine is stopped, and the fat will be seen collected as a very clear