REPORT

The attention of the Board of Health has been frequently and seriously directed to the disastrous consequences that must necessarily follow to the sanitary condition of the city, from the indiscriminate and constantly increasing application of the provisions of an ordinance of Councils, approved May 3d, 1855, entitled "An ordinance providing for the granting of permits to make openings into the common sewers."

The abuse of the privilege thus granted to communicate with sewers, by drains from privy wells liable to overflow of water, has been a subject of very general complaint, causing, as the practice necessarily does, nuisances of the most offensive character, more especially when the contents of full privies also are emptied in this manner.

In the first report made to the Mayor January 3d, 1860, under the present organization of the Board of Health, the attention of Councils was specially directed to the "filthy condition of the public docks, sewers, and inlets," arising from a great variety of sources, together with the improper use and application of the above-named ordinance. Again, in the annual report, made January 8th, 1861, Councils were reminded of the dangerous and increasing nuisance in question;—the Board, viewing it as a growing evil, which, if not arrested in due time, may lead to the formation of a sanitary grievance both difficult and expensive to remedy. They also alluded to the great aggravation of the same grievance, arising from the indiscriminate use of the sewers

for conveying away the deposits from water closets. They, in addition, suggested the importance of an ordinance with a view to the protection of the health of the city, that no opening into the sewers for either of the above purposes should be allowed without the permission of the Board of Health, and that no manufactories of any description should be suffered to connect with the sewers without first obtaining a like permission.

In subsequent annual reports, similar allusions have been made to the objectionable features of the ordinance in question, but the reiterations and expostulations of the Board have failed to arrest the attention of Councils, to a full realization of the gigantic sanitary evils that must inevitably result to the health of the city, should the system of connecting privy wells or water closets, or water privies with the sewers, continue to prevail.

In the early part of last year, 1864, the subject of abolishing privy wells altogether, and in lieu thereof adopting a system of connecting water closets and water privies with the sewers, claimed the attention of the Department of Surveys, and a report with a bill was prepared and submitted to Councils, a copy of which will be found in (Appendix A.)

This bill, with the accompanying letter from Strickland Kneas, Esq., City Surveyor, were sent to the Board of Health in order to secure their influence to its passage through Councils.

The bill was referred to the Sanitary Committee, by whom it was returned to the Board with the following report:

"The Sanitary Committee, to whom was referred the accompanying communication of Strickland Kneas, Esq., Chief Engineer and Surveyor of the city, and the report of the Committee on Surveys to Councils, with a copy of the 'Ordinance to promote public cleanliness and health,' beg leave to report that they have given the same their careful attention, and that while there are some things contained

therein which meet their approval, there are others they cannot endorse. Section 10th of the proposed amended ordinance, abolishing the practice of making connexion by drains into the sewers with cess-pools and privies, meets the entire approval of your committee, believing as they do with the surveyor that it is calculated 'to prevent, to a great extent, the increase of evils that now multiply rapidly.' Nor can they do better in expressing their views of the evils accruing from this system than to use the surveyor's own language, as contained in his report to the Mayor, December 31st 1860, (p. 71.) This system, he says, renders 'the air in our sewers most fœtid, making it absolutely dangerous in every way, as the gases penetrate every where, extending even into the material embedding the sewer, and on account of this it is impossible, in many instances, that any examination can be made with safety of their interior.'

"Had he concluded his report with this 10th section, without recommending and encouraging a general and indiscriminate drainage into sewers from water closets, yards, kitchens, and factories, when on the line of sewers, and prospectively as the city and its improvements extend, the entire abolition of cesspools and privies, your committee would have been prepared to approve the report.

"They regret, however, that while it admits the theory, (based no doubt upon the well-earned scientific and practical experience of its author, and the experience of those who have had opportunities for becoming familiarized with the results of sewer systems in operation in England, especially in London and elsewhere), that in order that the plan proposed should be effective to cleanliness and health, two elements are requisite, viz.: a full supply of water, and such arrangements as will prevent ordure or offal of any kind remaining in or near the premises—it does not insist upon the necessity of a far more abundant supply of water than the present works can possibly furnish, without a serious encroachment upon the demands of citizens for ordinary purposes. This omission is the more to be

regretted as it is known, and has been alluded to in several successive annual reports of the Chief Engineer, that the amount of water at present obtained is inadequate at certain seasons, while the constantly increasing demands require the most rigid economy to insure the necessary supply at all times.

"What, therefore, will be the consequence when the plan referred to goes into operation, with the numerous privies already emptying their fœtid contents into the sewers, in addition to the water-closets now in operation, and those that shall be constructed hereafter, to say nothing of the thousands of drains from other sources, without such an abundant water supply as would be adequate to the flushing of the sewers, from time to time as may be required, it is impossible to conjecture.

"It must be patent to all who have given attention to the subject of sewerage, that no system can be successful in the absence of flushing, either natural or artificial, and that such a process to be effectual requires a liberal supply of water. Your committee are surprised that the report does not refer more particularly to this fact if the proposed plan is to be inaugurated. Without proper and frequent flushing, solid material will, under the best regulated system, accumulate, prove an obstruction to the flow of the fluid and semi-fluid contents, and in the end fill up the branch or the main trunks of the sewers.

"It is not clear, however, to the minds of your committee, that the proposed bill will prove adequate to effect such a revolution in public cleanliness and health, as is claimed for it, even should the plan recommended, have connected with it the full water supply deemed necessary by its author.

"The flushing of sewers not only necessitates a large flow of water, but is a costly operation, if thoroughly and properly performed. It is less expensive, however, than the occasional visit of a direful epidemic with its attendant evils—the suppression of commercial trade, the wide diffusion of sickness and an extensive loss of life.

"It is the experience of your committee, which will be borne out by the board, that water closets, even when constructed on proper principles, are frequently liable to obstruction, and, when thus obstructed, create a nuisance equally if not more serious than a full privy, and far more difficult to remedy. Complaints are frequently made to this department respecting the accumulation of human ordure obstructing the drains, from water closets, and the nauseous odor arising therefrom affecting whole neighborhoods.

"What will be the result of this proposed modification of sewerage, as we have already intimated, when fully in operation, it is impossible even to imagine—when cesspools shall be abandoned, when the one million nine hundred and ninety six thousand tons of night-soil, or human excreta, annually discharged into the sewers, together with the semi-fluid refuse from kitchens and yards, house roofs and factories of every description, are mingled together, accumulated in the sewers and finally deposited in the docks along the city front in the Delaware and Schuylkill rivers. It truly involves a question essential in a sanitary aspect, and of great moment to the health of the city.

"In England it has been found that water closets, except in well regulated families, are liable to become greater nuisances than ordinary privies. In Glasgow, where the sewers empty their foul contents into the Clyde, a river differing but little, in regard to size and general character, from the Delaware—the tide rising about seven feet and the current of the stream being not more rapid than that of our river—the system gave rise to so great a nuisance that the surveyor recommended that the lower class of houses should return to the old privy system.

"We agree with the report, that the system of connecting cesspools and privies with sewers, is one of the most reprehensible allowed by law—that it throws into our sewers a flow of undiluted liquid of the most fœtid character, rendering them, in fact, nothing less than immense cesspools, and

polluting them so that no exploration or examination can be made without risk of asphyxia or death. At this point we raise the question, however, whether the change proposed will, materially, in its effects, differ, when, to the matter already received into the sewers is added, the immense mass of human and other ordure of the entire city, in a half dissolved state or suspended in water, especially under the existing system of sewerage. In short, your committee have no hesitation in expressing the opinion that, with the most perfect system and under the most favorable circumstances, as to elevation of ground-plan, and descent to river, with a deep stream and rapid current, it would be almost impossible to overcome the liability to a deposit, either at the bottom of the sewers or in the vicinity of the out-falls, of solid material, thus offering the same objectionable features, as described in the report, to which the present system of connecting with cesspools is liable.

"Nor are your committee prepared to endorse that part of the report which advocates the theory, by inference, if not directly, that the contents of water closets entering the sewers in a partially dissolved state (but which, by the way, is perhaps only suspended in water), are free from the dangerous results attendant on the deposit of more solid excreta. Fermentation, decomposition and the evolution of gases will continue to be produced, and, if they are not in error, far more rapidly, if the materials undergoing those changes are in a moist and partially dissolved state, than when solid, sending forth and loading the atmosphere with noxious and irrespirable vapors.

"Besides, the same nuisance which now prevails in our docks, contaminating the air of our eastern river side front, will of necessity be increased a hundred fold, under the influence of this proposed plan, inasmuch as no provision has been or can be made for carrying far away into the outer current or channel of the river the immense debris consequent upon the new system; even allowing that every

theory advanced in the report can be successfully carried out.

"It is the decided opinion of your Committee, therefore, that the bill proposed to councils will be a grand failure so far as regards the object contemplated, viz.: the promotion of public cleanliness and health; and that while it purports to prevent the increase of evils, rapidly multiplying as sewers extend, by destroying those centres of disease—cesspools or privies now existing, it will, in time, create a far greater evil, by promoting the deposit of privy filth in sewers and along the river fronts,—making them in reality, immense public cesspools.

"The connection of water closets with sewers, is an innovation upon the use for which they were originally constructed, inasmuch as they were intended for conveying off water alone—and your Committee think they are justified in averring that, they see no reason for giving their sanction to that innovation. The experience of engineers in Great Britain for the last ten years, has led many to doubt the propriety of adopting such a system to the abandonment of privy wells. "The character and habits of the population, the facilities for flushing the sewers, and the nature of the outfall, in regard to becoming offensive, should be carefully considered. On the continent of Europe, water closets according to the English fashion, appear to be comparatively little used, except at Hamburgh, the objection to them being the loss of so much valuable manure, and the fear of creating nuisances at the outfalls of the sewers." (*Chicago Sewerage, p.* 58.)

"Your Committee have already intimated that a proper system of flushing is required for the cleansing of our sewers; without this, the entire plan should be rejected. But at the same time they affirm that even with it, it is too hazardous an experiment to be trusted on a large scale. Parent Duchatelet, twenty years ago came to the conclusion from his experience with the Paris sewers, that flushing alone would not cleanse them, and to this day notwith-

standing their immense size, as the largest class are thirteen feet five inches high, constructed with rails or galleries adapted to cars and sufficiently lighted for the convenience of workmen, force has to be employed to remove by hand, solid substances formed in their depressed bottoms. The same result takes place in the London sewers.

"Two thousand years ago the Romans understood the necessity for flushing their sewers, both for cleansing and for purifying the air in them, having learned by sad experience that the neglect of this means, was followed by outbreaks of malignant fevers. They too, though they used water freely, found it necessary to remove substances from them by hand. (*Chicago Sewerage.*)

"Your Committee are disappointed at finding that in the proposed ordinance no provision has been introduced admitting the necessity of sanitary oversight, as to the character of the connection that shall be made with sewers, and as to what kind of factory, whether salubrious or insalubrious, or what classification of substances shall be admitted without regard to their solubility or otherwise.

"Entertaining these views your Committee esteem the bill an imperfect one, and offer the following:

"*Resolved,* That the above report be adopted and submitted to Councils."

Receiving the unanimous approval of the Board, copies of the above report were forwarded to Councils and by them referred to the Committee on Surveys.

For a time the whole subject remained in the hands of that committee. Within a few weeks, however, a modified bill (APPENDIX "B") has been offered in Councils, in which it was understood the objectionable features of the original one had been stricken out.

This bill, like its predecessor, was referred to the Board of Health, and again found its way into the hands of the Sanitary Committee. The result of this action was the annexed report.

"The Sanitary Committee to whom was referred an

amended bill submitted to Councils, entitled 'An Ordinance to promote public cleanliness,' beg to report, that they have examined it with the same degree of attention they had bestowed on the former and give their hearty approval to so much of the plan for the sanitary improvement of the city, as proposes to abandon the system of connecting privy wells with sewers, and to cut off all existing connections therewith; and as provides underground drainage for the contents of all gutters and horse railroad tracks now passing over footways and street crossings, believing it likely to institute a reform, essentially demanded, more especially for the removal of *surface drainage*, which in most instances is a common receptacle for stagnant water, semi-fluid mud and other putrid rubbish matter, the combination of which constitutes a fertile source of humidity and disease, and is at all times antagonistic to the laws of health.

"Your Committee however regret that they find themselves under the necessity of objecting altogether to continuing to citizens 'the privilege of connecting properly constructed water closets or water privies with sewers.'

"The entire plan will, if continued, become a monstrous nuisance. Even under the best regulated system of sewerage, such a plan could not fail to be fraught with numerous sanitary evils, too serious in their results to be countenanced, without having received that critical and plenary examination which the 'grave import of the question' so richly merits.

"With the fullest confidence in the integrity and practical skill of our distinguished City Surveyor, we may be allowed to differ with him in reference to the efficiency of our city sewerage and drainage. We regard the whole of what has been done in these matters as imperfect. He, himself, as quoted by Mr. Cheeseborough, of Chicago, acknowledges that nothing like a system has been followed in the construction of our sewers. 'Large sewers sometimes discharge their contents into smaller ones, and occasionally others have either slopes or steps up when they

should be down.' This want of uniformity in regard to the surveys of grades and in the construction of sewers, is one of the sad disadvantages resulting from the old district divisions of the city, prior to consolidation, when there were as many different surveyors as municipalities, and when no two departments worked harmoniously; hence there has been a condition of things which has entailed upon us an imperfect—nay, a faulty system of drainage. Besides, the abuse complained of by the Surveyor himself, of the privilege now exercised by individuals of making indiscriminate connections with sewers, is another evidence of the imperfection in question, and if this license continues, without interruption, he says he would not be 'surprised if we are at length called upon to cleanse our sewers by manual labor of the deposits thus created.' (*First annual report to Mayor, p.* 91.) Then, again, the plan of surface drainage is an evil in our system, which we are happy to know is about to receive attention from the authorities, by such an entire revolution as will effectually remedy a most flagrant nuisance and materially improve our system of drainage.

"Beyond all we have named, the practice of draining privy wells into, and connecting water closets and water privies with sewers, together with the horrid condition of the docks along the river front, that receive the filth belched forth daily out of the mouths of the sewers, afford still stronger evidence of our imperfect system of drainage.

"If the system, as at present adopted in Chicago, which, in our opinion, is only an experiment on a large scale, of connecting water closets and water privies with sewers, and emptying their contents into the river, should prove a success—and this time only can safely determine—it will be the happy result of a threefold combination in the arrangement of a new city, of which no other metropolis has ever enjoyed the advantage, viz., the superior skill and studied experience of its engineer, based upon a careful scientific and personal examination of the sewered cities in

Europe and in this country; the improved uniformity and correctness of the surveys, the lines, sizes and constructions of the sewers; together with a river flowing through the centre of the city, without tide, of an average depth of thirteen feet, seldom varying more than two feet and ordinarily not one, and a slight but constant change kept up in its feeble current by the natural flow from the area drained by the river and waste water from the adjoining canal.

"'During the last two years there has been very little or no complaint from this cause.' But, notwithstanding this favorable presentation of the success of the Chicago experience, Mr. Cheeseborough takes the wise precaution of qualifying its success, and remarks, that while 'no one of these great cities (in Europe) furnishes an exact criterion by which to judge of the effect of discharging the sewage of Chicago into our river and branches, yet their experience leads me to fear we may yet, like them, conclude that it will be necessary to keep it out.' (*Chicago Sewerage, p.* 92.)

"If our present system of cesspools is, in the language of the City Surveyor, 'an abomination and a nuisance,' your Committee are not without authority for the opinion that the continuance of the ordinance, granting permits to connect water closets with sewers, however perfect may be their construction, will constitute, and more certainly in the future, even with an increased supply of water-power for flushing the sewers, an abomination and a nuisance, ten-fold more dangerous to the health and comfort of the citizens than the present cesspool system. The danger we apprehend does not depend so much on imperfectly constructed drains from water closets and water privies, as on the accumulation of the solid and liquid ejecta of the population, in the sewers themselves, and the exposure it is subject to at every ebb tide, both in the Delaware and Schuylkill, as it escapes from the sewer outfalls.

"On this subject, Mr. Cheeseborough, in his report, writes: 'The greatest actual innovation upon the original use of

sewers is the immediate connection of water closets with them, and the consequent abandonment of privy vaults. This, however, has not become universal in any large city yet, though very general throughout Great Britain for the upper and middling classes of houses; but the experience of the last ten years has led many to doubt the propriety of its adoption in all cases. The character and habits of the population, the facilities for flushing the sewers, and the nature of the outfall, in regard to becoming offensive, should be carefully considered. On the Continent, water closets, according to the English fashion, appeared to be comparatively little used, except at Hamburgh, the objection to them being the loss of so much valuable manure, and the fear of creating nuisances at the outfalls of the sewers.'

"The plan of communicating water-closets with sewers is without doubt an improper and even unlawful innovation. The system, as already mentioned, was originally designed for the conveyance of water alone from open ditches. In course of time, however, the practice of employing them for the washings of streets, and house refuse prevailed. Now every kind of factory with privies and water-closets are allowed to communicate with them. This is highly improper on account of the serious nuisance engendered thereby; and it is certainly an unlawful privilege unless granted by the Board of Health, as by an Act of the Legislature, no deposit shall be made of privy filth anywhere within the jurisdiction of the Board of Health, or any thing else liable to become a nuisance, without violating a wise health law. (*General Health Law of* 1818, *sect. xvii., and Act, March* 16, 1855, *sect. v.*)

"One of the most serious evils connected with our present plan of sewerage is the ever accumulating amount of its offensive solid contents. This collection, derived from the fluid and semi-fluid refuse of almost every department of industry that can be enumerated, located within the range of the sewers, both public and private, together with the

washings of the streets and alleys, undergoes putrefactive decomposition, and, hence, becomes the source of the virulent and toxicological emanations escaping into the atmosphere, whether at the terminations of the sewers or in their passage through the streets, from the numerous man holes, inlets, or less commodious apertures.

"The danger from these poisonous gases in this city has been, on more than one remarkable occasion, fearfully experienced during the advent of the various epidemics of yellow fever which have usually made their first appearance in the immediate vicinity of the terminus of the sewers on the river front, and from these nuclei scattering desolation and death in every direction.

"To avoid the grievances connected with any system of drainage, and to get rid of the offal of a city in the least objectionable manner has been, and ever should be, a desideratum with civil engineers and the custodians of public health. The natural result, however, of adhering to the above-named ordinance will be, in the judgment of your Committee, the augmentation rather than the diminution of the debris of our sewage; and should the plan of water-closet and water privy connection with sewers become general (and your Committee can discover no reason to hinder it), their sedimentary deposits would be alarmingly increased in amount. We base this assumption on the investigations made by Dr. Letheby for the Commissioners of Sewers of London, in which it is shown that the excrement of the population entering into the sewers of that great metropolis constitutes one-third of their solid contents, amounting, in a single day, to upwards of 152 tons!!

"It must be remembered, therefore, that, proportionately to the population of this City, this addition, to an already putrefactive mass, would consist of decaying organic compounds of a most offensive character, evolving foul and suffocating gases, even before it enters into the composition of the sewage.

"Setting aside the plausible objections already alluded to,

your Committee do not hesitate to offer it as their opinion that our City is not advantageously located topographically, to be improved in a sanitary aspect by encouraging and perfecting a system of connecting water-closets and water privy drains with our sewers. The great difficulty lies in the fact, that two sluggish rivers creep along the eastern and western boundaries of the present densely populous and business portions of it; and the tidal currents unable to bear away the sedimentary matters beyond the power of the returning waters, this half-dissolved putresent material, with the foul additions gathered in their laggard course from the rivers themselves and the adjacent shores, is brought back and conveyed by eddies into the docks and on the neighboring banks only to rankle and ferment at the reflux of every tide, when it is exposed, contaminating the surrounding atmosphere with its offensive and pestiferous effluvia, which has ever been a well recognized cause for the nourishment and spread of epidemic diseases.

"Besides this natural disadvantage, which is without remedy, we may safely refer also to the defective construction of our old sewers, already noticed, as regards their inclination, size, shape, and uniformity of level, together with the present limited supply of water power for flushing the sewers, in the event, we would add, of satisfactory evidence being afforded that the flushing system would be fully adequate to the task of cleansing them.

"These artificial hindrances to a perfect sewerage are however susceptible of correction, not, however, without an immense outlay of the finances of the City, viz.: by the entire reconstruction of the sewers and a more abundant supply of water power, not only to render it equal to the present demand, as we believe it inadequate, but to meet the exigencies required by the rapid growth of the City.

"The natural drawback—the relations of the two river beds to the City, which are inevitably fixed, and are incapable of any satisfactory improvement—suggests a more vigorous work of cleanliness, and the adoption of more

stringent regulations providing against the accumulation of every thing of an offensive nature liable to deposit being conveyed either into and through our sewers, or otherwise, into the adjacent streams, already sufficiently polluted.

"Your committee are not insensible to the impracticability of the efficient working of an ordinance that would cut off all water closets now connected with our sewers, but they cannot do otherwise than approve of an ordinance prohibiting the further use of the sewers for such purposes.

"Great as is the nuisance arising from the present offensive character and amount of deposit in our sewers, and from thence distributed in our docks along the river front, they would feel themselves guilty of maintaining a nuisance should they not thus formally protest against a continuance of the practice. Better is it to "bear the ills we have than fly to others we know not of."

"The proper disposal of sewage, and the excreta of the population of a large city, are questions as yet unsettled.

"While sewerage has met with universal approval, no efficient system has as yet been adopted any where. All existing plans abound with defects, and public sentiment in favor of sanitary reform has been so thoroughly aroused, that a problem so important as this will not be suffered to rest, till a satisfactory solution is obtained.

"The feeling is becoming very general, that wherever practicable, sewage should not be allowed to pollute watercourses of any kind, and the efforts to avoid it have resulted in presenting to the public three classes of projects, viz.: the *intercepting*, the *irrigating*, and the *deodorising*. (Chicago sewerage.)

"Impressed with the paramount necessity for judicious municipal legislation in all instances where public hygiene is involved, your committee are constrained from a sense of duty, thus to offer their objections to a continuance of the system of making connection with sewers as relates to water closets and water privies. They are sensible, however, that the whole subject is far too comprehensive in its

bearings on public health to be embraced in this report, and far too grave for hasty legislation.

"They therefore hope that Councils, in their wisdom, will still continue to hold the entire subject in abeyance, until further and more definite information can be secured.

"In reference to the granting of permits for making connections with sewers, your committee would again call the attention of Councils to the importance of requiring a permit from the Board of Health before any opening shall be made to connect with sewers, except in cases of water drains from private residences.

"In conclusion, your committee would offer the following resolution:

"*Resolved*, That the above report with the recommendations, be adopted.

"All of which is respectfully submitted.

(Signed,) WILSON JEWELL, M. D.,
RENE LA ROCHE, M. D.,
JACOB COATES,
ELIAB WARD, M. D.,
PETER ARMBRUSTER,
Sanitary Committee.

This report, was approved April 4th, 1865, and referred back to the Sanitary Committee for preparation in a suitable form for publication, together with the report of the committee on the bill as originally presented. It was also ordered that it should form a part of the annual report of the Board to the Mayor for the use of Councils.

HEALTH OFFICE,
PHILADELPHIA, *April 17th*, 1865.

APPENDIX A.

DEPARTMENT OF SURVEYS,
Office of the Chief Engineer and Surveyor,
Philadelphia, April 18, 1864.

JAS. A. MCCREA, M. D.,
President of the Board of Health,

SIR:—I beg leave to submit for your examination a report and bill, which have been laid before Councils, with reference to sewer connections and the prospective abolition of all cess-pools. If in conformity with the views of your Board, and you would be pleased to make such statement to Councils, by resolution or otherwise, it would have great weight in obtaining a favorable consideration of the bill.

May I ask your consideration of the matter.

Very respectfully, &c.,

STRICKLAND KNEASS,
Chief Engineer and Surveyor.

Extract from "An Ordinance to promote Public Cleanliness and Health," submitted to Councils April 6th, 1864:

"SECT. 2. That from and after January 1st, 1865, any person (who shall be the owner or lessee of premises,) desiring to connect with any of the sewers in the streets, shall make application at the Department of Surveys, and shall pay for said privilege the sum of ten dollars, except they shall have paid proportionally, for the construction of said sewer, in which case the sum of three dollars shall be paid.

"SECT. 3. That it shall be the duty of the Chief Engineer and Surveyor, on or before the first day of November, 1864, to appoint a competent person in each Survey District to make so much of the connections with the Sewers as may be within the street lines, the same to be done under the supervision of the Survey Department, and the expense thereof (excepting the repaving) to be defrayed by the person to whom the privilege is granted. The charges to

be made by the respective persons so appointed, for their services, shall be uniform, and shall be established by the Chief Engineer and Surveyor, under the supervision of the Committee on Surveys.

"SECT. 8. It shall not be lawful to erect any house or other building, or to rebuild any house or building to or below the floor commonly called the ground floor, or to occupy any house or building so newly built or rebuilt, if upon the line of a Sewer unless a drain and such branches thereto and other works and apparatus with water supply, be constructed and connected with water closets or privies, which drain shall lead from such house or building, or the intended site of such house or building, to the Sewer. And hereafter, no cesspool or privy-well shall be constructed or used as connected with any house or building so newly built or rebuilt.

"SECT. 10. That no Sewer license shall be hereafter granted to connect with any cesspool, and no substance shall be conducted into a Sewer which will not be carried off by suspension in water."

APPENDIX B.

Extract from "An Ordinance to promote Public Cleanliness and Health," submitted to Councils March, 1865:

"SECTION 5. That no new dwelling-house, store, or other building, shall be erected on any street or alley in which there is a sewer, without providing an under-ground connection by drain pipes with the sewer for carryivg off all drainage that would otherwise flow over the footway; and in all cases where there are gutters now over the footway which, in the opinion of the Chief Engineer and Surveyor, are objectionable, and are situated upon a street where there is a sewer, or where, in the erection of new buildings after the passage of this ordinance, the directions herein specified have been disregarded, it shall be the duty of the

Chief Engineer and Surveyor to give written notice to the owner, or occupants of the premises, to connect with the sewer by under-ground drainage; and in case of non-compliance with said notice for the space of thirty days after the service thereof upon the owner or occupant, there shall be incurred by said owner the penalty of thirty dollars for each month of failure.

"SECT. 6. No license shall be hereafter granted to make connection with a sewer for the purpose of preventing the overflow of a privy well, and no substance shall be conducted into a sewer which will not be carried off by suspension in water; and all such sewer connections now existing shall be cut off by the Chief Commissioner of Highways within thirty days after written notice so to do has been served (by order of the Chief Engineer and Surveyor) upon the owner or occupant of the premises drained.

"SECT. 7. That, in all cases where the connection is for the purpose of conveying to the sewer such drainage as would otherwise be permitted to flow across the footway, the license must be taken out in manner herein specified; but no charge shall be made therefor, other than the sum of three dollars for re-paving the carriage way.

"SECT. 8. It shall be the duty of each Passenger Railroad Company occupying the streets of the City of Philadelphia, whenever the same may be over a sewer, to make at their own expense a connection between the horse-path of their track and the underlaying sewer at such points and in such manner as shall be approved by the Chief Engineer and Surveyor; and upon the failure so to do within thirty days after written notice has been given them by said Chief Engineer and Surveyor, it shall be the duty of the Chief Commissioner of Highways to have the same done, and the cost thereof to be collected from the Railroad Company as directed in Section 10 of this ordinance.

"SECT. 9. That if any one shall make a connection with any sewer in violation of the provisions of this ordinance, or shall use it for purposes not specified in license, there

shall be incurred the penalty of fifty dollars, and connection shall be severed.

"SECT. 10. It shall be the duty of the City Solicitor to prosecute for all penalties incurred under this ordinance, upon the direction of the Chief Engineer and Surveyor."