

amenable to the lessons of the praiseworthy individuals who have hitherto laboured so vainly among them, and a moral reformation would be added to their physical improvement.

Were this even of no importance in itself, it would at least effect the object to which its proposal is limited in this Report, it would remove the indubitable sources of the comparatively high rate of mortality among this portion of the inhabitants of St. Andrew's.

Such are the few recommendations I feel myself warranted to make in connexion with the facts which have been here stated.

And I have the honour to remain,
Gentlemen,
Your most obedient Servant,
JOHN ADAMSON.

To
The Poor Law Commissioners.
March 16th, 1841.

No. 16.

ON THE SANITARY CONDITION OF THE POOR OF ABERDEEN.

BY DR. A. KILGOUR AND DR. JOHN GALEN,

Secretaries to the Committee of the Magistrates and Town Council for Inquiring into the Sanitary Condition of the Poor of Aberdeen.

HAVING been appointed, at a meeting of a Committee of the Town Council with the medical gentlemen attached to the Infirmary and Dispensaries, as secretaries for managing the Inquiry as to the Sanitary Condition of the Poor of Aberdeen, it appeared advisable to us and the gentlemen present not to adhere, in all points, to the form of questions transmitted by the Poor Law Commissioners of England, (it being in many respects not applicable to this town,) but to follow up the views and intentions of the Commissioners as detailed in their Circular of 19th June, 1840, by such machinery as might be best suited to the locality. Accordingly, we were directed to prepare and issue certain Tabular Forms and Queries, having reference to the number of the population attacked with fever, and applying at the different medical charities; their ages; their station of life as indicated by their occupations; and the nature and character of their residences; with the opinion of the medical officers of these Institutions as to the causes of the extension and propagation of the fever, and the means of correcting such circumstances as they might consider as fostering or promoting the extension of disease among the community. And we were directed to prepare a General Report on the condition of the town, to be transmitted, along with the individual Reports, to the Commissioners.

In the performance of this duty, we have found reason to regret that we have not been enabled to ascertain numerically some points of considerable interest; and, in fact, we feel that the information expected in a report of this kind cannot be furnished with unquestionable accuracy until the department of statistics has made more extensive advances, and furnished securer grounds for general inferences.

In this Report we adopt the following order:—

- I. Fever, and its statistics, and cholera.
- II. The supposed causes of fever, embracing the paving, drainage, and sewerage; the deficient cleanliness of the streets and lanes; the deficient cleanliness and ventilation of dwelling-houses; the too crowded state of the population; poverty, and intemperance.
- III. The remedies suggested for these agencies.

I. FEVER.

Aberdeen has been visited by three epidemics of fever in the last twenty-two years. The first was in the years 1817-18-19. We have no means of ascertaining the number attacked during that epidemic; but it was so great that the infirmary, which at that time had only two wards for fever patients, admitting eleven patients each, was found altogether insufficient, and two additional places were opened as fever hospitals.

The second epidemic was in 1831-32. During this epidemic two additional fever wards were opened in the infirmary, and accommodation given to fifty-two fever patients, instead of twenty-two as formerly. From the Dispensary Record, we find the following in regard to fever patients for these two years:—

1831, admitted . 705; dead . 15
1832, do. . 1999; do. . 42

The third epidemic may be said to have commenced towards the end of 1837, and extended over 1838-39, and to the present period of 1840.

We subjoin here a Table of fevers at the Dispensary and Infirmary, with the deaths at each, for five years, regretting that, from deficiencies in their respective records, it cannot be extended over a longer consecutive period of years:—

Year.	General Dispensary.		Infirmary.	
	Admitted.	Dead.	Admitted.	Dead.
1835	355	6	261	18
1836	277	10	407	32
1837	656	34	651	42
1838	757	34	515	10
1839	733	22	575	63

If we deduct from those admitted in the Dispensary, one in ten being about the proportion of those afterwards sent to the Infirmary, it will follow that the cases of fever in each year, at these institutions, have been—

Year.	Admitted.	Dead.
1835	581	24
1836	644	42
1837	1242	76
1838	1222	44
1839	1251	85

In regard to the present epidemic, it appeared to us advisable to include a period from 1st July, 1838, to 1st July, 1840, because within this period only could we find the information we desired in the Infirmary Register; and we submit the following Tables from the different returns given in to us.

The first Table includes the ages of those applying at the dispensary and infirmary (deducting those entered in the dispensary registers and afterwards sent to the infirmary), with the deaths in the respective ages. We have commenced the series with those of twelve years of age, because under this age children are not admissible to work in factories at full hours, and very few consequently are at any employment. In another Table, most of those under twelve years of age are put down as not engaged in any occupation, and we therefore preferred placing all under that age in one division.

TABLE I.—AGES OF THOSE ATTACKED AND DEAD.

Ages.	Males.			Females.			Both Sexes.		
	Number Attacked.	Number Dead.	Deaths per cent.	Number Attacked.	Number Dead.	Deaths per cent.	Number Attacked.	Number Dead.	Deaths per cent.
Under 12	558	21	3.76	498	26	5.22	1,056	47	4.45
From 12 to 20	369	21	5.69	496	12	2.42	865	33	3.82
„ 20 30	250	30	12.0	395	27	6.84	645	57	8.84
„ 30 40	139	17	12.23	205	20	9.75	344	37	10.76
„ 40 50	105	40	38.09	146	19	13.01	251	59	23.51
„ 50 60	54	17	31.48	72	10	13.89	126	27	21.43
„ 60 70	23	6	26.09	44	8	18.18	67	12	17.91
„ 70 and upwards)	11	4	36.36	19	4	21.05	30	8	26.67
Total . . .	1,509	156	10.34	1,875	126	6.72	3,384	280	8.27

The second Table points out the numbers attacked in each of the months in the same period, the same deduction being here

given for those sent from the dispensary to the infirmary as in the former Table.

TABLE II.—NUMBER ATTACKED EACH MONTH.

	1838.	1839.	1840.
January . . .	..	103	245
February . . .	..	82	290
March . . .	..	70	294
April . . .	..	79	322
May . . .	..	62	253
June . . .	..	76	224
July . . .	81	106	..
August . . .	74	118	..
September . . .	79	140	..
October . . .	56	182	..
November . . .	79	240	..
December . . .	91	244	..

In the following Table the object aimed at will no doubt appear to be to ascertain the liability of certain trades or occupations to fever, and the mortality in these. Had the material for this Table been as complete as we desired, it would have afforded us considerable information as to the social condition of the sick, and the disposition of fever to extend by contagion in families. The Dispensary Registers contain the occupation of every patient, or, in the case of wives or children, the occupation of the husband or father, but in the Infirmary Registers nothing is entered but the occupation or trade, if any, of the patient.

We have endeavoured to be as accurate as possible in this Table, but, from the discrepancy in the plan of the registers at the two institutions, we cannot refer to the female column as to be, in all points, relied on, for if the entries, "*married women*," and "*children not at work*," had been spread over the occupations of the husband or father, the prevalence of fever in families would have been made much more manifest, and given force to the opinion as to the highly contagious nature of the disease. Even the large number of females entered as "*working at factories*" will be corroborative of this to the minds of those acquainted with the domestic state, to be afterwards noticed, of our manufacturing population.

The proportion of "*house servants*" is very great; but it is partly swelled out from families getting alarmed even at a slight illness in servants, and their being in consequence sometimes sent to the hospital as fever, and entered thus, when that is not the disease.

TABLE III.—OCCUPATIONS OF THOSE ATTACKED AND DEAD.

Males.	Number attacked.	Dead.	Per cent.	Females.	Number attacked.	Dead.	Per cent.
Labourers . . .	182	35	19·23	Wives & Children of	178	7	..
Weavers and Hecklers	102	10	9·80	„	64	4	..
Blacksmiths, Founders, &c.	91	7	7·69	„	38	1	..
Wrights, Sawyers, Coopers, &c.	62	15	24·19	„	56	3	..
Shoemakers	50	10	20·	„	27	..	..
Tailors	29	5	17·24	„	29	..	..
Bakers and Brewers	12	3	25·	„	2	..	..
Butchers	7	3	42·85	„	4	..	..
Gardeners	17	4	23·47	„	10	3	..
Shopmen and Clerks	18	2	11·11	„	25	..	..
Carters and Porters	28	7	25·	„	150	11	..
Seamen	37	6	16·21	„	14	3	..
Pilots and Fishermen	2	..	..	„	6	..	..
Painters and Plumbers	9	..	..	„	5	..	..
Rope and Sail Makers	12	..	..	„	24	2	..
Masons and Quarriers	25	2	8·	„	4	..	..
Combmakers	30	..	..	„	..	..	..
Bookbinders	2	2	..	„	..	..	..
Millers	6	1	..	„	1	..	..
Stablers	3	1	..	„	1	..	..
Dyers	5	1	..	„	..	..	..
Barbers	2	1	..	„	..	..	..
Tobacconists	5	..	..	„	5	1	..
Soldiers and Pensioners	3	1	..	„	12	1	..
Hawkers and Tinkers	7	..	..	„	..	..	..
Gas Workers	2	1	..	„	1	1	..
Music Teacher . . . . .	..	..	..	„	32	2	..
Paupers	29	1	..	„	7	1	..
Workers in Factories	123	13	10·56	„	..	..	..
Servants	15	2	..	Children not entered above	174	6	3·44
Children not otherwise entered	200	6	3·	Married women, do. and widows	259	25	8·65
Occupation not given	354	15	..	Females working in Factories	467	15	3·21
				House Servants	222	17	7·65
				Nurses	14	..	..
				Washerwomen	29	4	13·44
				Sempstresses, Knitters, &c.	44	4	9·09
				Paupers	29	9	31·03
				Trade unknown	11	1	..

Several inferences, besides the one noted, viz., the extension of the disease by contagion in families, might be made from the preceding Table; but we do not consider that we are called upon to make these, and we leave the Table to speak for itself.

The Infirmary Register contains no information as to the districts of the town from which the fever cases are brought; and from the imperfect state of some of the returns from the dispensaries, we find it impossible to define in a map those parts of the town most subject to malarious influences; in fact it appears that wherever the poor are collected together, fever, when it occurs as an epidemic, extends its ravages amongst them by contagion. Fever is constantly more or less present in all the districts of the Dispensary; and the extent of the epidemic appears to depend upon the condensation of the population, aided by want of ventilation, poverty, and the other usual remote causes of the disease. Not being able to form any table or map of localities where fever exists, or to connect it in any district with any *distinct and indisputable malarious influence*, we refer to the individual reports, leaving the opinions therein expressed to be weighed by the Commissioners by the amount of facts brought forward in each report.

The cholera visited Aberdeen in August, 1832. Mr. Campbell, who acted as superintending surgeon at that period, has furnished us with the following particulars. The number of cases was 260; and the deaths 105. Of this number 56 cases occurred in a fishing village containing 56 houses, or 112 rooms, with 480 inhabitants, or above four individuals in each apartment, close to the sea and harbour. This village, consisting of two squares of houses, was so deficient in drainage as to call for strong remonstrances from the Board of Health to the magistrates and town council, who are the landlords. At Cotton, a manufacturing village within two miles of the town, there were 28 cases, of which 11 died; and in Old Aberdeen there were 13 cases giving four deaths. Almost all the other cases were in the east end of the town, which includes a part of it inhabited chiefly by the poorer classes.

The appearance of this epidemic was anticipated by the most active exertions of a Board of Health, by whom the town and suburbs were divided into districts, which were visited by a committee of the board; and cleanliness, whitewashing, and the removal of all nuisances effected at the expense of the landlords or of the Board itself. The dread of the invasion of this disease excited even the lower classes to unwonted cleanliness; and on reading over the reports of the district committees, we observed that the internal condition of the houses visited by them was, upon the whole, very satisfactory.

In the following year the state of the town was so healthy that the directors of the General Dispensary brought the gratifying circumstance before the public in their Annual Report, and ac-

counted for it in terms which may be quoted as bearing some reference to the present inquiry.

“As the causes of this diminished sickness amongst those requiring the assistance of the dispensary, the directors believe they may ascribe—

“1st. The cleanliness in the houses of the poor, as promoted by the exertions of the district committees of the Board of Health during the appearance of the cholera in this country.

“2d. The opening of the additional fever-wards in the infirmary, by which those affected with fever obtained ready admission, and thus have been separated from the crowded apartments of their dwelling-houses, and the spreading of the infection thereby prevented.

“3d. A third cause, however, and one which the directors refer to with much satisfaction, has been the full employment of the labouring classes, at such wages as have furnished to them the necessary comforts of life. Whilst they hope that this, the most efficient means of diminishing sickness, will long continue, they would at the same time strenuously put in the view of the landlords of houses occupied by the poorer classes the great importance of keeping them in the most thorough state of repair and cleanliness, and especially of frequent whitewashing, as tending so much to the comfort and health of the inmates.”

II.—CAUSES OF FEVER, OR OF ITS PROPAGATION AND EXTENSION.

1st. *Paving, Drainage, and Sewerage.*

Aberdeen is for the most part remarkably well paved, and ample powers are vested in the commissioners of police for enforcing this in all streets within the boundaries prescribed in their Act. With the exception of a few lanes near the harbour, the town is well situated for effectual drainage. But unless in a few of the principal streets built within the present century, there are no large common sewers. The streets amount in number to 108; and a return from the police states that in all these there are only 28 sewers, measuring altogether 4442 yards. But on examining the police records, it appears that the sewers, from four to six feet deep by two and a half to three feet wide, extend to only 2175 yards; and the others are drains from one foot to three feet deep, and from nine inches to one foot and a half wide. The police state in addition, “There are a great many drains, covered and open, in the streets, lanes, courts, &c., of which we have no list, and it would be very difficult to make one.”

The deficiency of large common sewers is attempted to be made up by cesspools. These are most numerous near recently-built houses in streets and squares off the main line of new streets. Rain and surface water, and the water used in kitchens and water-closets, are conveyed into these cesspools.

To a question to the police, “Whether these cesspools are

known to them?” the answer is, “The number is not known, but we believe there are a great many.”

The Act under which the police of this town is managed by a body of commissioners contains no powers to tax the inhabitants for the making of common sewers, however necessary; nor, a greater omission still, to compel those opening new streets, or building in them, to put down a sewer.

We do not find, however, in the Returns sent in to us, deficient drainage or sewerage entered as causing or propagating fever; and, in fact, from the declivity of the streets and lanes, and the granite used in paving them, the water runs speedily off, and the town appears superior to many others in drainage.

2d. *Deficient cleanliness of Streets, Courts, &c.*

In the Returns we find several entries on this subject. Aberdeen, like most other towns, had at one time been very closely built; and hence not only the old streets and lanes (the latter amounting to about 60) are comparatively narrow, but there are courts or closes to the number of 168, of which the average breadth is not above seven feet. As nearly all families of the better classes have left courts for more airy residences, the character of courts and closes has much fallen. They are occupied by a much inferior description of tenantry than they were some years ago, and much less attention is given to keeping them clean. They are not only ill ventilated, but they have an open kennel running along them which is the receptacle for all sorts of filth. In regard to ash-pits and privies, they are either remarkably deficient, or these are kept in the worst possible order.

The same remarks apply to almost all the lanes and wynds; and it will be observed from the Returns that the great proportion of the fevers occur in closes or courts, or in lanes or streets which are narrow and very dirty.

By the Police Act, the whole manure, excepting that of stables, and that also of houses in a few streets in the suburbs, is the property of the police. This manure is farmed by parties, the police collecting it at their own expense, and the police funds derive a profit from the manure. The manure is collected by carts every morning from the street-doors, or heads of closes, where it is deposited in boxes, intimation being given of the passing of the dust-cart by a bell attached to it. Where there are ash-pits, these are emptied early in the morning when full, or when the police may think fit.

This plan is well adapted for houses in the line of the streets, but inhabitants of courts and closes are not regular in depositing their ashes at the head of the court, and consequently, where in these there are not ash-pits, the filth is retained in the house till it has accumulated past endurance, or is thrown out in the court, forming an open dunghill. Mr. Fraser, in his Report, refers to

this as a cause of fever in Masson's-court, Justice-street, in particular.

The police state, in the Return furnished by them, that there are 418 ash-pits, of which the manure belongs to them, and only 104 privies attached to these. Now, in examining some of the most densely-peopled streets, and those where the courts are most numerous, the proportion of receptacles for filth is far below what it should be: thus the Gallowgate, a street of 616 yards in length, and containing 44 courts, with an average of four houses in each, has only 17 ash-pits and 10 privies; and North-street, extending to above 500 yards, with numerous courts, and densely peopled by a very low class, has only 12 receptacles for filth and not one privy. None of the houses in these streets, be it observed, are provided with water-closets, and the ash-pits and privies are for the most part the property of the better class of the inhabitants, and are kept locked up from the public.

One of the greatest errors in the Police Act is that by which the Commissioners cannot erect public water-closets or privies in those parts of the town where they may be required. The Return from the police states that there are only three privies open day and night to the public belonging to the police; and 31 belonging to stables, the latter of which, however, are only open during the day, and are not kept in the best order. In consequence of the deficiency in this respect, the bye-streets and lanes, as well as the courts, are commonly exceedingly filthy; and to keep them clean would require a much greater body of scavengers than the police employs.

As connected with this part of the subject, we may notice two nuisances which are brought under notice in several of the Reports; these are the Harbour and the Denburn.

The latter, which we notice first, is a mill-burn which passes through what will soon be the centre of the town. It is open above, but built with stones in the bottom and at the sides, and it is laid out with cascades, &c., in the ornamental style. In times of heavy rains the stream is full and rapid; at other times the quantity of water scarcely covers the bottom. Into this ornament of the town, which extends to 588 yards, there fall above 45 drains, kennels, or common sewers; and at one part it is the recipient of all the filth from some low houses in the vicinity. The Cholera Board entered a strong complaint against this public nuisance.

The Harbour is a tidal one, with only a very moderate fall. Into the upper part of the Harbour runs the stream above noticed, as also another mill-stream, which, though now covered up in the most of its course through the town, receives a great number of drains, privies, &c., in its progress. Besides these two sources of impurity, the upper part of the Harbour receives the refuse of some large manufactories, and several drains and sewers. All

the sewers and drains of the town terminate in the basin of the Harbour. The consequence of this is that the Harbour is covered with a thick fœtid mud, from which, at nearly low water, the surface becomes covered with bubbles of a fœtid noxious gas, which, bursting, give forth a most intolerable stench that is perceived at a considerable distance in the town.

It does not appear that fever prevails in the vicinity of any slaughter-houses, tanneries, nor burial-grounds, and no entry is made in regard to any of these in any of the Reports.

Aberdeen may be said to contain only two burial-grounds in the town. One of these (St. Nicholas's) is not closely surrounded with dwelling-houses, and it is as neatly laid out as circumstances will admit of. It contains 1A. 3R. 25P. 14Y., imperial measure, and is divided into 2452 graves. The burials in it were—

For 1838	. . .	545
1839	. . .	258

And up to 1st August, 1840	. . .	196
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so that it would appear this burial-ground is being forsaken for the cemeteries in the suburbs.

Of the above extent, 1R. 13P. 8½Y., containing 592 graves, is apportioned as a burial-ground for the poor: and the returns to us of the number interred in this space, during the corresponding periods, as above, are—

1838	. . .	394
1839	. . .	122

And up to 1st August, 1840	. . .	100
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so that the falling off appears to be chiefly among the poor, arising probably from the circumstance that they can afford to purchase ground lairs in the new burial-grounds, and still more from the poor-rates not paying for coffins, unless the body be buried out of the dead-house.

To the questions, "How many coffins are put into one grave in the poor's ground? What is the order in which these coffins are put down, and the quantity of earth between them, as also the depth of the grave to the sole of the lowermost coffin?" the answers are, "The number of coffins put into each grave average from five to six; and the intervals commonly from nine months to one year or thereby. The order in which they are put down is, the one upon the other; the quantity of earth between each is about one inch, and the depth of each grave from nine to ten feet, and sometimes eleven feet."

We have reason to believe, though it is not here stated, that the old coffins are taken up and the new one put in lowermost, the former lying about on the ground until the interment of the last body; and the statement of the depth of the grave is, we think, given much beyond what is usually the case.

The other burial-ground (St. Clement's) is also not closely sur-

rounded with houses. It contains 2R. 23P. 19Y., imperial measurement, divided into 1055 graves. Of this space, 5P. 10Y., containing 60 graves, are appropriated to the poor. The total number of funerals here was—

	For 1838	. . .	109
	1839	. . .	128
And up to 1st August, 1840	. . .		63

Those of the poor were—

	For 1838	. . .	9
	1839	. . .	6
And up to 1st August, 1840	. . .		5

The rule is the same as to the mode of putting down the coffins as in the former case.

3rd. *Deficient Cleanliness and Ventilation of Dwelling Apartments.*

These are two points which in part depend upon the supply of water, and the construction of the houses; and still more on the habits of the people.

According to the Return of the police, the quantity of water supplied daily, on an average of one week, is 568,800 gallons, but this includes the water furnished to manufactories, so that we have no data to calculate the quantity for each person. Even dividing this quantity, however, by 48,000, which may in round numbers be taken as the population using police water, it is not a high quantity to each, supposing none to be used in the manufactories. The police state that there are 1446 families having water-pipes into their houses, which, multiplied by four, gives 5784 as the population abundantly supplied. All others must draw it from the public wells. The police state that nine courts have a pipe in the court for the use of the inhabitants of the court generally. The police can supply water to any extent, and the poor pay no tax for it.

Mr. Fraser alludes in his Report to the bedding in two lodging-houses never being washed after fever, and where new comers are put into a bed previously occupied by a fever case; but even in the houses of the labouring classes very little attention is often paid to cleaning the bedding or wearing apparel after fever; and when an individual of the family has been removed, the others continue to occupy the same bed, and for the most part become affected with the same disease.

The houses in Aberdeen occupied by the poor and labouring classes are on an average three stories high; and few of these have cellars which are inhabited. The glass in the windows of the common staircase is often broken, and ventilation thereby so far promoted; but in general the houses are not well ventilated; the windows are often small and seldom opened, and the poor, for

the most part, even when fever exists in the house, cannot be induced to keep the windows partially open. An increase of intelligence amongst the lower orders, and the example of cleanliness and purity in others, and especially in the streets and lanes around them, can only eventually lead them to improvement in this respect.

Very few of the houses of the description now noticed are provided with pipes for carrying off the dirty water from the apartments up stairs into the kennel or drain, and hence it is allowed to stand often until it has become putrid. The water and filth, when carried down stairs, are often in part spilt, and the common stair is, from these and other causes, in a state of extreme dirtiness.

Whitewashing the walls, and especially the walls of common stairs, is almost never attended to in the lowest class of houses, and very seldom in those of the labouring classes, excepting where a removal has taken place, when the apartment is whitewashed by the incoming tenant. Frequent removals therefore—a practice very prevalent amongst the labouring population here—however injurious to them in an economical point of view, are of use in ventilating and cleaning houses.

Hitherto rents were paid twice a-year, and were generally paid with great regularity; but of late, in consequence of the frequency of arrears, a practice is creeping in of collecting them in small sums weekly, and a class of landlords, in this way, contrive to obtain even a much higher rent than their premises are worth, whilst, their risk being less, they are entirely careless as to the character of the individuals they admit as tenants, and being sure of their property being let to some persons or others, refuse all repairs, whitewashing and painting.

4th. *Overcrowded Dwelling Apartments.*

This seems to be more generally admitted as the cause of the extension of fever than any other.

We have no correct data for stating the average number occupying one apartment among the poor and labouring classes, but all the Reports that specially notice this cause regard it as very high.

Those who apply for advice at the dispensaries or the hospitals are, for the most part, occupants of one, two, or, at the furthest, three, small rooms. Aged paupers, and widows with young families, occupy chiefly a single garret room; labourers also, with wife and family, occupy one room only; whilst two or three mill-girls generally sleep in one apartment.

Where a family is so far advanced as that two or three members are working, two rooms are commonly rented by them, and used in this way, viz. the father and mother, with the younger children, sleep in the room used as the kitchen, whilst the others sleep in the adjoining apartment, some of them in a bed erected

in it, and others in a temporary bed put down on the floor at night.

Where the weekly income from the combined wages is greater, and especially where there are young men working as tradesmen, there are sometimes three apartments, each with its one or two beds.

Dr. Keith says the "crowding is fearful. I have seen six or eight sleeping in one apartment, with every crevice stopped, and have more than once been nearly suffocated by entering the apartment after several of them were up and out."

Mr. Wood says, "Overcrowded dwelling apartments are very general;" and there are several houses in his district, "occupied as inferior lodging-houses, which are crowded with mendicants or vagrants; and here contagious diseases are always found, if found anywhere in the neighbourhood."

Mr. Fraser also brings to notice the existence in his district of "lodging-houses where beds are procured by vagrants at a low rate, are kept very dirty; and when a patient is removed, or dies, the first new comer is put into the bed previously so occupied, without any measures being taken to prevent contagion."

Dr. Galen says, "The most important circumstance which I have observed, as regulating the propagation of febrile diseases, is *contiguity to the sick*, arising from the overcrowded state of the apartments."

Dr. Dyce says, "In my opinion, contagion has had more influence in the production and propagation of fever than any of the causes specified." He regards deficient cleanliness and ventilation, and too crowded apartments, more as predisposing than exciting causes; and he states that "When fever once has appeared in a poor family, it seldom ceases until all its members have been attacked, as few or no means are taken to check the disease, beyond the removal of those attacked to the infirmary." Dr. Dyce refers to those entered as mill-workers (by far the most numerous class), as proving the extension of fever by contagion among persons occupying the same house or room.

Dr. Kilgour reckons deficient cleanliness and overcrowded dwelling apartments as causes of fever; but states that, of all causes, contagion is most operative in extending the disease. He says, of 482 cases, of which a record has been kept, 284 came from infected houses.

Mr. Templeton says, "An overcrowded state of the dwelling apartments is the chief cause of the propagation of fever."

5th. *Poverty and Intemperance.*

The Queries of the Commissioners contain no reference to those causes of epidemic diseases; but as several of the medical gentlemen seemed to place much stress on these, we added them to the other supposed causes of fever in the blank form we issued.

Mr. Campbell regards overcrowded apartments, poverty, and intemperance as the most general cause of fever.

Mr. Fraser says, "I consider fever attributable to all the causes mentioned, but more especially to poverty and intemperance."

Mr. Leslie says he considers poverty and intemperance as more particularly the cause of fever.

Mr. Templeton regards poverty and intemperance as, in a few instances, assisting in the propagation of fever.

Mr. Wood found poverty as a cause of the disease among widows having children, labourers, weavers, and some others: and that these classes are reduced to extreme poverty when laid aside from work by sickness or accidental causes. He also found intemperance the cause of much disease; and that the intemperate were, of all others, the most liable to be attacked with the worst and most contagious fevers.

Dr. Kilgour mentions intemperance as a cause of fever, and says that "the intemperate and those exposed to poverty and other privations were the most fatal cases."

Dr. Galen says, "When persons exposed, in overcrowded apartments, to contiguity with the sick, take the disease, it has appeared to me to be aggravated by circumstances connected with the individual, as advanced age, previous habits of intemperance, and recent privation of rest, with anxiety of mind."

III.—REMEDIES SUGGESTED FOR THE PRECEDING AGENCIES, WHETHER AS CREATING OR PROPAGATING FEVER.

Where so much difference of opinion exists as to the primary cause of fever, it cannot be expected that there will be anything like unanimity of sentiment as to the means to be adopted for checking or arresting this malady.

We have read over the remarks in pages 29 and 30 of the "Reports on the Sanitary State of the Labouring Classes, as affected chiefly by the Situation and Construction of their Dwellings in and about the Metropolis;"* and in so far as the suggestions there, and especially those in regard to thoroughfares, lanes, courts, buildings, and drainage and sewerage, are not provided for in the Police Act of Aberdeen, we would urgently advise that they be added in a new one, which, from what we have already stated, is most imperatively called for. All the reports, with the exception of that by Drs. Galen and Harvey, call for an improvement and extension of the police, and we think a committee of the police commissioners, or of the town council, or of both, should be elected annually to act as a Board of Health.

It is almost unnecessary to say that such nuisances as the Harbour and the Denburn, in their present state, should be cor-

* Vide Appendix to this Report, p. 300.

rected at any sacrifice. One large sewer, to convey the whole drainage and sewerage of the town to the extreme end of the harbour, readily suggests itself as a remedy.

Whitewashing the apartments of the poorer classes is recommended in several of the reports; and we think this should be made compulsory on all landlords of low-rented houses, and be done at least once a-year, at the sight of the police inspector.

With respect to the other circumstances, intemperance and poverty, dwelt on in several Reports as causes, or at any rate as means of aggravating fever, we do not consider it necessary to make any remarks here. We refer to the reports themselves for the remedies proposed for these. Mr. Leslie, Mr. Frazer, and Dr. Kilgour recommend better allowances from the poor's funds to the sick poor; and Dr. Keith and Mr. Wood propose an extension of the means of religious instruction and training as a corrective to the physical and moral degeneration of the poorer classes.

Amongst the most important of the remedies suggested, we find that Dr. Galen, Mr. Templeton, Dr. Harvey, and Mr. Wood, all agree in recommending increased hospital accommodation, or some means of separating, absolutely or relatively, the sick from the healthy. We believe there is an unwillingness on the part of patients to enter an hospital; but when once there, they almost invariably feel thankful for the change, and urge their friends, when ill of fever, to go to the infirmary. Unfortunately for many fever patients, they do not take the benefit of the hospital at a sufficiently early period of the disease, and the removal to it in the advanced stage is much more injurious than otherwise.

(Signed) A. KILGOUR, M.D.
JOHN GALEN, M.D.

APPENDIX.

Extract from the Report of Dr. Arnott and Dr. Kay, on the Prevalence of certain Physical Causes of Fever in the Metropolis, which might be removed by proper Sanitary Measures.

It appears that the magnitude of the evils complained of in the preceding communications has caused occasional and irregular efforts for their removal by the local authorities, which, wanting in most cases the direct sanction of law, and being dependent on the general concurrence of the inhabitants for the authorization of the expenses incurred, have necessarily been inadequate for the removal of the nuisances of which complaint is made. The expenses thus incurred have frequently been illegally charged upon the poor-rates, and not seldom without any public concurrence of the inhabitants, but only with their tacit compliance in the acts of the local authorities: since the law has made no provision for the payment of such charges out of the poor-rates, the

auditors have been unable to allow them, and even the irregular and insufficient efforts alluded to are therefore likely to cease.

The visitation of cholera, and the formation of special boards of health, powerfully excited the public attention to the extent of these evils, and the amount of social mischief, of which they were the fertile sources; and well-directed efforts were at that time made, with considerable success, for the temporary abatement of whatever noxious physical influences were found to impair the well-being of the poorer classes and endanger the community generally. Though these efforts have for some time past ceased to be made, because the special boards of health have been dissolved with the disappearance of cholera, the facts disclosed by the investigations conducted by those boards produced an impression on the public mind which still remains, and which will lead the more intelligent members of the middle classes to welcome any effort which the government may make to procure a legal sanction to their efforts for the removal of these evils.

It does not appear that such authority could be so usefully entrusted to any other public body as the Board of Guardians:—

1. Because the means of inspection necessary to the detection and prevention of the evils complained of already exist in the paid officers of the Board.

2. Because they are a representative body in constant communication with the inhabitants, who are interested alike in the removal of the evils, and in the right application of the funds contributed by them as rate-payers.

3. Because the evils, the removal of which is sought by the exercise of the authority of the Board of Guardians, are such as affect the health of the poorer classes especially, and, by depriving them of ability to labour, occasion their dependence upon the parish, and the Board will therefore necessarily witness both the effects of the evils complained of on the health of these classes, and also be in a situation to ascertain the effects of their interference.

In order to procure the removal of the nuisances described, two classes of powers might be conferred on the Board of Guardians:—

1. Power to procure the temporary cessation of the evil reported.
2. Power to prevent its recurrence.

Under the first class of powers the Board of Guardians might be authorized to direct at the public expense—

1. That uncovered and stagnant drains and ditches, or open and stagnant pools of water, from which fetid effluvia arise, should be emptied and cleansed.

2. The drainage of any open common or waste land which appeared, upon the report of two of the medical officers, injuriously to affect the health of the inhabitants or to cause ague.

3. The removal of accumulations of refuse thrown from the houses, or otherwise collected in the streets, courts, lanes, and entries, and the cleansing of all surface drains of such streets, courts, lanes, and entries.

4. To direct the removal of accumulations of filth from cesspools, privies, piggeries, cow-houses, stables, &c., yards of dwelling-houses, and houses, whenever two of their medical officers certified in writing that the state of such places was likely to prove injurious to the health of the neighbourhood.

5. To cause from time to time an inspection of the lodging-houses at which paupers, vagrants, and mendicants are reported by their officers to lodge.

6. To direct the whitewashing of the rooms of such houses at least twice every year, and if, after notice to that effect from the clerk of the Board, dated ten days previously, the inspector shall find the occupier has neglected to comply with such directions, to authorize the Board to cause the house to be whitewashed by such persons as they may appoint for that purpose, and to recover the cost of such whitewashing and cleansing by application to the occupier or owner of such property, or by a summary mode upon refusal of either of them.

7. When the inspector shall report that three or more families live under the same roof, to authorize the Board to cause such house to be whitewashed and cleansed in a similar manner at least twice annually, at the expense of the owner.

8. Empowering the Board to direct two public surveyors to examine the state of any house which shall be reported to be so dilapidated or insecure as to threaten the safety of the inhabitants or the public, and upon receiving such report, to remove the inhabitants from such house, and to direct the owner of such property, under penalties to be summarily recovered, to cause such habitation to be rendered safe, or to be removed, as may seem most expedient to the Board on the report of the surveyors.

9. To prevent the habitation of houses which have for such causes been deserted, and from which no rent is on that account obtained by the landlord.

We cannot close the Report without remarking that the extirpation of the evils arising from these defects in the sanitary police of large cities cannot be effected unless powers are confided to some authority selected by the legislature for the prevention of those grievous defects to which our attention has been drawn. The imperfect drainage, or the absence of all drainage whatever, the want of a proper pavement in the street, &c., are frequently found in districts which have been recently covered with masses of new habitations huddled together in confused groups, with streets so narrow, and courts so completely enclosed, as to prevent the dilution of the malaria arising from various sources within their precincts by the ventilation of free currents of air.

Many of the most recently erected suburbs of our great cities exhibit so complete a neglect of the most common and obvious precautions, that it can be attributed only to the fact of the increase of the population being so rapid that the owners of such property can command tenants, notwithstanding the absolute neglect of sewerage, and the absence of many precautionary arrangements absolutely necessary to ensure health. We do not suppose that the means of preventing the recurrence of such evils can be immediately applied; and the circumstances under which this Report is prepared do not enable us to do more than briefly to allude to the nature of the powers which it appears to us to be desirable that the legislature should confide to some competent authority, whenever this subject can obtain the attention which its great importance justly demands.

We do not attempt to determine to what body these powers should be confided, nor do we consider it necessary to describe the exact mode of

their operation, but it seems most expedient that to some authority should be confided power to cause the survey of land (in the vicinity of towns) likely to be built upon, and to enforce certain conditions on the owners and lessees of such property.

Thus no building should be commenced until plans of the intended streets were prepared, describing the situation of every block of houses for such an extent of area as should be required by the Board entrusted with the regulation of the precautionary measures; duplicates of such plans should be deposited with the Board, and no building should afterwards be erected on the site otherwise than had been delineated in the plans.

The Board should have authority to prevent the formation of streets of less than a certain number of feet in width, and to prevent the formation of courts having communication only by means of covered entries, or alleys of less than a definitive width, with thoroughfares and streets.

It should also have power to prevent the habitation of cellars in any houses erected after the period of the enactment.

Authority should be given to require that, before any buildings are erected on any plot of ground now unoccupied or only partially occupied with houses, such plot of ground shall be drained by such sewers as the Board shall deem sufficient; and, provided any owner or occupier of such land should proceed to build without having provided such sewers as the Board should direct, the Board should have authority to cause such sewers to be made at the cost of such owner, and should be empowered to recover the cost from him.

That the Board should have authority to require that every habitation should be provided with a drain communicating with the main sewer, with a proper receptacle for every kind of refuse.

No. 17.

SANITARY REPORT ON THE TOWN OF INVERNESS, NORTH BRITAIN.

By GEORGE ANDERSON, Esq., *Solicitor in Inverness.*

BEFORE answering in detail the printed queries to which returns have been required, the following general observations on the situation and climate of Inverness may probably render the after-details more pointed and intelligible.

This town stands on a nearly level plain, within a mile of the mouth of the river Ness, which falls by a short and rapid course (of only seven miles) into the Moray Frith, from the great inland reservoir of Loch Ness. Traversed by the river in a direction from south-west to north-east, this plain, which consists entirely of *sand* and *gravel*, (covered with a slight coating of