

## X.

Summary of Results of an Inquiry at Blackburn made under the supervision of J. R. Hutchinson, M.D. The Investigation covered the Period of the three Epidemic Waves.

Summer.—June, July, August, 1918.

Autumn—September, October, November, December, 1918.

Winter.—January, February, March, 1919.

1. Age and Sex Incidence. Whole Period of the Three Epidemics.

	Sex.	Under 1 Year.												75 and over.	Total.
		1-2.	2-5.	5-10.	10-15.	15-20.	20-25.	25-35.	35-45.	45-55.	55-65.	65-75.			
Population investigated.	M.	18	7	39	65	64	46	25	67	68	60	48	26	1	533
	F.	8	10	50	73	54	58	52	149	109	76	68	31	13	751
Persons affected	M.	3	2	10	13	9	7	3	18	19	6	2	9	-	101
	F.	-	2	9	12	16	18	12	44	25	17	16	3	-	174
Per cent. of both sexes affected.	-	11.5	23.5	21.3	18	21.2	24	19.5	28.7	24.9	17	15.5	11.4	-	-
Escaped	M.	15	5	29	52	55	39	22	49	49	54	46	16	1	432
	F.	8	8	41	61	38	40	40	105	84	59	52	28	13	577
Deaths	M.	1	-	1	-	-	1	-	-	-	-	-	-	-	3
	F.	-	1	1	-	-	-	-	-	-	1	2	-	-	5

	Per Cent.
Incidence on population investigated	21.41
Mortality of population investigated	0.62
Mortality among persons affected	2.91

2. Age and Sex Incidence. Summer Epidemic.

	Sex.													Total.	
		1-2.	2-5.	5-10.	10-15.	15-20.	20-25.	25-35.	35-45.	45-55.	55-65.	65-75.			
Affected	M.	-	-	-	1	4	6	2	9	8	4	1	4	-	39
	F.	-	-	2	3	7	9	6	22	12	6	4	1	-	72
Per cent. affected	-	-	-	2.2	2.9	9.3	10.4	10.4	14.3	11.3	7.4	4.3	9	-	-
Escaped	M.	18	7	39	64	60	40	23	58	60	56	47	21	1	494
	F.	8	10	48	70	47	49	46	127	97	70	64	30	13	679
Deaths	M.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F.	-	-	-	-	-	-	-	-	-	1	-	-	-	1

	Per Cent.
Incidence on population investigated	8.64
Mortality of persons investigated	0.07
Mortality of persons affected	0.90

## 3. Age and Sex Incidence. Autumn Epidemic.

	Sex.	Under 1 Year.	1-2.	2-5.	5-10.	10-15.	15-20.	20-25.	25-35.	35-45.	45-55.	55-65.	65-75.	75 and over.	Total.
Persons affected	M.	-	-	5	10	4	2	1	4	4	2	1	2	-	35
	F.	-	-	5	6	5	3	3	12	7	6	5	2	-	54
Per cent. affected	-	-	6	11.2	11.6	7.6	4.8	5.2	7.4	6.2	5.9	5.2	7.1	-	-
Escaped	M.	18	7	34	55	60	44	24	63	64	58	47	23	1	498
	F.	8	9	45	67	49	55	49	137	102	69	63	29	13	696
Deaths	M.	-	-	1	-	-	1	-	-	-	-	-	-	-	2
	F.	-	1	-	-	-	-	-	-	-	-	-	-	-	1

	Per Cent.
Incidence on population investigated	- 7.01
Mortality of population investigated	- 0.23
Mortality among those affected	- 3.33

## 4. Age and Sex Incidence. Winter Epidemic.

Persons affected	M.	3	2	5	4	2	1	-	6	7	4	1	4	-	39
	F.	-	1	2	4	5	10	4	12	7	7	8	1	-	61
Per cent. affected	-	11	19	8	5.8	6	10.7	5.2	8.3	8	8	7.8	9	-	-
Escaped	M.	15	6	33	61	62	44	25	61	61	56	47	21	1	492
	F.	8	8	48	69	49	48	48	137	102	68	60	30	13	688
Deaths	M.	1	-	-	-	-	-	-	-	-	-	-	-	-	1
	F.	-	-	1	-	-	-	-	-	-	-	2	-	-	3

	Per Cent.
Incidence on population investigated	- 7.81
Mortality of population investigated	- 0.31
Mortality among those affected	- 4.00

## Summary.

Affected summer only.	M.	-	-	-	1	4	4	2	9	8	1	-	3	-	32
	F.	-	-	2	3	7	6	5	21	11	4	4	1	-	64
Autumn only	M.	-	-	5	8	2	1	1	3	4	-	-	2	-	26
	F.	-	1	5	5	4	-	3	10	6	6	4	1	-	45
Winter only	M.	3	2	5	2	1	1	-	5	7	1	1	3	-	31
	F.	-	1	2	3	4	9	4	11	6	5	7	-	-	52
Multiple attacks	M.	-	-	-	2	2	1	-	1	-	4	1	1	-	12
	F.	-	-	-	1	1	3	-	2	2	2	1	1	-	13
Total affected	M.	3	2	10	13	9	7	3	18	19	6	2	9	-	101
	F.	-	2	9	12	16	18	12	44	25	17	16	3	-	174

5. Table showing number of Second Attacks among Persons investigated.

		Autumn Epidemic.											Total.			
		Sex.	Under 1 year.	1-2.	2-5.	5-10.	10-15.	15-20.	20-25.	25-35.	35-45.	45-55.	55-65.	65-75.	75 and over.	Total.
Total persons affected	M.	-	-	5	10	4	2	1	4	4	2	1	2	-	35	
	F.	-	1	5	6	5	3	3	12	7	6	5	2	-	55	
Affected summer and autumn.	M.	-	-	-	-	1	1	-	-	-	1	1	-	-	4	
	F.	-	-	-	-	-	2	-	1	1	-	-	-	-	4	
Affected autumn escaped summer.	M.	-	-	5	8	2	1	1	3	4	-	-	2	-	26	
	F.	-	1	5	5	4	-	3	10	6	6	4	1	-	45	

6. Table showing number of Second and Third Attacks among Persons investigated.

		Winter Epidemic.													
Total persons affected	M.	3	2	5	4	2	1	-	6	7	4	1	4	-	39
	F.	-	1	2	4	5	10	4	12	7	7	8	1	-	61
Affected autumn and winter escaped summer.	M.	-	-	-	2	1	-	-	1	-	1	-	-	-	5
	F.	-	-	-	1	1	-	-	1	-	-	1	1	-	5
Affected summer and winter escaped autumn.	M.	-	-	-	-	-	-	-	-	-	2	-	1	-	3
	F.	-	-	-	-	-	-	-	-	1	2	-	-	-	3
Affected summer, autumn and winter.	M.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	F.	-	-	-	-	-	1	-	-	-	-	-	-	-	1
Affected winter only	M.	3	2	5	2	1	1	-	5	7	1	1	3	-	31
	F.	-	1	2	3	4	9	4	11	6	5	7	-	-	52

BLACKBURN.—TABLE SHOWING FREQUENCY OF SECOND ATTACKS.

		Total population investigated.				
		1,284				
Summer	-	1,173				111 (1)
Autumn	-	1091	81 (3) (6·8 per cent.)		9 (8·2 per cent.)	
Winter	-	1,008	83 (4) (7·6 per cent.)	10 (1·3 per cent.)	6 (5·4 per cent.)	1 (11·1 per cent.)

Note.—Attacks are in italics.  
Deaths in heavy type.

*Note.*—Four persons were affected twice during one epidemic, viz. :—  
One, November and December 1918.

Three, February 1919, and two weeks later. These three comprised the whole of one family, and one (F. 2) died.

Of the eight fatal cases only one (F. 2) had previously suffered from influenza (two weeks earlier).

### 7. House Incidence.

Number of Houses investigated.	Number escaped all Three Waves.	Number affected.	House Incidence	Houses invaded in						
				Summer.	Autumn.	Winter.	Summer and Autumn.	Summer and Winter.	Autumn and Winter.	Summer, Autumn, and Winter.
300	166	134	Per Cent. 44·6	56	50	63	10	10	11	2

### 8. Incidence on Occupiers of Invaded Houses.

Condition of House as regards Number of Inmates.	Number of Houses investigated.	Houses			Population.		Persons affected.				Incidence on Inmates.
		Affected.	Escaped.	House Incidence.	Of Houses invaded.	Of Houses not invaded.	Single Attacks.	Double Attacks.	Triple Attacks.	Total.	
A.—Houses with one or more persons per room	176	87	89	Per Cent. 49	486	448	163	20	1	184	19·70
B.—Houses with less than one person per room	124	47	77	38	155	195	83	8	—	91	26·00

### 9. Multiple Cases.

Cases per House.	Type of House.	Summer.			Autumn.			Winter.			Total.		
		Type A.	Type B.	Total.	A.	B.	Total.	A.	B.	Total.	A.	B.	Total.
1	A.—One or more persons per room.	20	14	34	22	12	34	30	10	40	72	36	108
2		11	6	17	4	2	6	11	5	16	26	13	39
3		1	3	4	4	3	7	3	2	5	8	8	16
4	B.—Less than one person per room.	4	1	5	1	2	3	1	1	2	6	4	10
5		1	—	1	1	—	1	1	—	1	3	—	3
6		1	—	1	1	—	1	—	—	—	2	—	2

Of the 134 invaded houses some were invaded in more than one outbreak; the number of invasions of houses was 178:—

In 108, or 60 per cent, of instances, there was 1 case only.  
 In 39, or 22 " " " " were 2 cases.  
 In 16, or 9 " " " " " " 3 "  
 In 10, or 5 • 5 " " " " " " 4 "  
 In 5, or 2 • 75 " " " " " " more than 4 cases.

Tables 8 and 9 together show that the incidence on the inmates of invaded houses of Class A. was 13 • 1 per cent., as compared with 12 • 7 per cent, for Class B.

Of 193 persons sleeping in same room as patient,  
 76 were attacked - - - - - = 39 • 3 per cent.  
 Of 145 persons nursing influenza patients, 43  
 were attacked - - - - - = 29•6 per cent.  
 Of 73 persons nursing and sleeping with patient,  
 24 were attacked - - - - - = 32 • 8 per cent.  
 In 161 out of 301 attacks (= 53 • 4 per cent.) a doctor was in attendance.

Occupation of Females over School Age.	Affected.	Escaped.	Incidence.
			Per cent.
Household - - - - -	59	226	20•7
Factory - - - - -	63	170	27•0
Other work - - - - -	14	31	31•1

*Complications.*—47 out of 301 attacks (= 15 • 6 per cent.) were followed by complications:—

Summer, 7.  $\frac{7}{111} = 6\cdot3$  per cent.

Bronchitis, and abscess, thigh - - 1	
Bronchitis - - - - - 2	Death, F., 53, bronchitis.
Pneumonia - - - - - 1	
Cardiac debility - - - - - 1	
Rheumatism - - - - - 1	
Enteritis - - - - - 1	

Autumn, 16.  $\frac{16}{90} = 17\cdot7$  per cent.

Pneumonia - - - - - 8	Deaths.
Bronchitis - - - - - 2	M., 4, influenza.
Quinsy - - - - - 2	M., 15, pneumonia.
Rheumatism - - - - - 2	P., 1 5/12, pneumonia.
Cystitis and lumbago - - - - - 1	P., 55, melancholia (inquest).
Delirium - - - - - 1	(Lived until March).

Winter, 24.  $\frac{24}{100} = 24$  per cent.

Bronchitis - - - - - 9	Deaths.
Broncho-pneumonia - - - - - 1	M., 8/12, bronchitis.
Pneumonia and convulsions - - - - - 1	F., 2, pneumonia.
Pneumonia - - - - - 8	F., 59, influenza.
Epistaxis and hæmoptysis - - - - - 1	
Hæmoptysis - - - - - 1	
Convulsions - - - - - 1	(+ 1, pneumonia and convulsion, noted above).
Slow convalescence - - - - - 1	
Pleurisy - - - - - 1	

*Complications among Persons with Multiple Attacks,*

Summer and Autumn.—Nil.

Autumn and Winter—

Pneumonia, each attack	-	-	-	2
Bronchitis, each attack	-	-	-	1
Bronchitis and infl., each attack	-	-	-	1
Epistaxis, winter	-	-	-	1
Vulvitis, autumn	-	-	-	} 1
Broncho-pneumonia, winter	-	-	-	
Pneumonia, winter	-	-	-	1
Bronchitis, winter	-	-	-	1

Thus five persons out of 10 who were attacked both in autumn and winter had some complication in the first attack. These five also had complications in the second attack. Three persons had complications in the second attack only.

Summer and winter—

Bronchitis, summer	-	-	-	} 1
Pneumonia, winter	-	-	-	
Pneumonia, summer	-	-	-	1 (has chronic bronchitis).
Epistaxis, winter	-	-	-	1
Thacheitis and Laryngitis, winter	-	-	-	1

Thus two persons out of six had in the previous attack suffered from some complication. One suffered from complication in each attack. Two suffered from complication in the second attack only.

*Incidence on Persons who were subject to Chronic Catarrh or other Inflammatory Conditions.*

Chronic bronchitis	-	-	-	4
Chronic laryngitis	-	-	-	1
Chronic cough	-	-	-	1
Delicate: "weak chest"	-	-	-	4
"Frequent colds"	-	-	-	2
Asthma	-	-	-	1
Tuberculosis (pulmonary)	-	-	-	1

$$14 = \frac{14}{275} = 5 \text{ per cent.}$$

Diarrhoea	-	-	-	-	1
Dysentery	-	-	-	-	1
Gastric ulcer	-	-	-	-	1
Hemiplegia	-	-	-	-	1
Goitre	-	-	-	-	1
Pregnancy	-	-	-	-	4 (Still birth, one).

Thus out of 275 persons affected with influenza, 14 persons were stated to have some form of respiratory catarrh.

Other variations from normal health were noted amongst nine persons.

Of four recorded cases of pregnancy among 174 females affected, one still birth was noted.

*Note, re Tables 7 and 8.*—At six houses investigated there were resident persons who had suffered from influenza whilst away from home (*e.g.*, in Army). No other member of the family had suffered, the *houses* consequently were *not invaded*, and are therefore not included in the "number of houses invaded" (134).

In Table 7, these six houses have been included in the "number of houses escaped," but the six persons affected are included in the number of "single attacks" (163), occurring in house of Type A, with one or more persons per room. The population of these six houses is 32.