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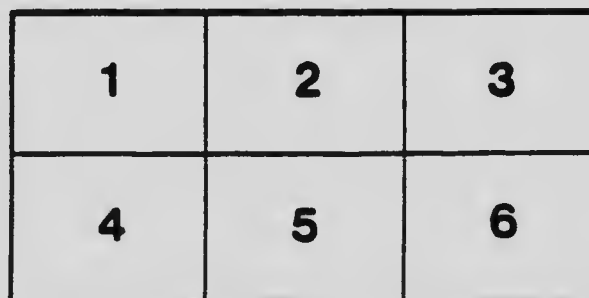
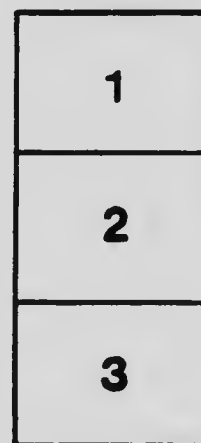
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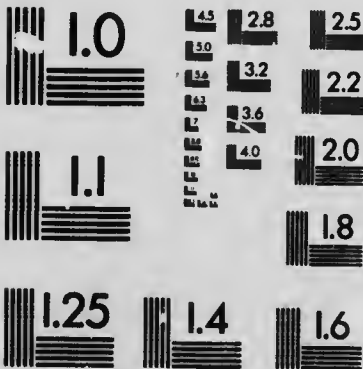
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Commission of Conservation
CANADA

Fire Prevention and
Fire Protection

FRANKLIN D. SEVERORTH

Director, Fire Research and Prevention, Ontario
Fire Department

Published for the Ontario Council of the
Commission of Conservation

OTTAWA - 1961

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Commission of Conservation
CANADA

Fire Prevention and Fire Protection

BY

FRANKLIN H. WENTWORTH

*Secretary of the National Fire Protection Association
Boston, Mass.*

Reprinted from the Seventh Annual Report of the
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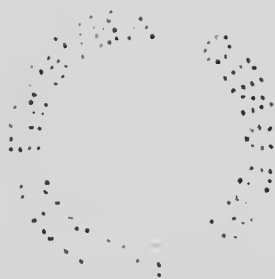
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Fire Protection and Fire Prevention

BY

FRANKLIN H. WENTWORTH

*Secretary of the National Fire Protection Association
Boston, Mass.*

THE National Fire Protection Association, although born in the United States some twenty years ago, is now international in its operations, a large portion of our membership being in Canada. Both the United States Government and this distinguished Commission are represented on our Board of Directors, the Deputy Head of the Commission, Mr. White, being one of our correspondents and Dr. Stratton, of the United States Bureau of Standards, another; so we have been working for the last half dozen years directly with the United States Government, and also in co-operation with the work of this Commission in its fire prevention work.

Annual Fire Loss

I had thought to utilize certain statistics upon fire waste, but I assume that most of the gentlemen of the Commission are familiar with them. Besides there is on the table in the ante-room a pamphlet, "Fire Waste Facts and Figures,"* which gives very clearly an account of the Canadian fire waste and the expenses of fighting fires. For example, it shows that the annual average fire loss in Canada for the past three years has been \$23,000,000. Then it adds the cost of insurance protection in excess of the losses paid, and the cost of maintaining water-works and private fire protection, aggregating a total annual cost of over \$49,000,000. Those are colossal figures, and, when you add to them the cost of fire waste in the United States, it makes a grand aggregate of \$218,000,000 a year in the United States and Canada.

Property that has been burned is gone forever; it cannot be replaced, except by an equal, or, perhaps, by a greater, output of human energy. This great waste is not only impoverishing the citizens of the United States and making their struggle for a livelihood harder, but the operation of this tax is equally hard upon Canadians. The fire waste of the more prudent countries of Europe is also set down in this pamphlet. There is a striking

*See Appendix.

difference in the number of fire alarms, the loss per capita and the number of fire alarm per 10,000 of population. In Edmonton, the number of fire alarms was 550 in 1915 and in Tokio the number was 521, and yet the average number of alarms per 10,000 of population was 76 in Edmonton, while in Tokio the average was 2.

What is the Cause?

The above shows us clearly the character of our people. What is the excuse for it? What is there in our industrial, our commercial, our social life—because the life in Canada and in the United States is practically the same—what is it that leads us, willingly, to sustain this tremendous strain without any organized protest? We in the United States think that with us it is largely psychical. We have had boundless natural resources. So has Canada. Any people, or individuals, born to affluence and to luxury, will spend easily; and we Americans, and you Canadians, have felt that our supply of natural resources was inexhaustible. It is only within the last seven years that the United States Government has taken any interest in conserving those properties and those resources which remain to us collectively as a people; and the existence of your Commission indicates that the same thought is now dominant with you—that some consideration must be given to the coming generation—and our heritage which we must preserve and conserve for those to follow after.

Early Destruction of Timber

The feeling that our supply of lumber is inexhaustible is, I think, largely responsible for the American attitude towards the fire waste. When the settlers first came to North America, they had to cut down and burn beautiful standing pines, to get at the soil to cultivate it. That bred in them, and has continued in us, a feeling that our supply of timber was inexhaustible, and it was easier for us in this new country, to build and burn and build again than to adopt those methods of building so long recognized in the old world.

I wish, for a few moments, to deal with the economic consequences of this fire loss, and then, out of our experience, indicate certain things which the Commission may do, certain plans which may be laid and followed and which will not be prohibitive in expense, in getting this big work started. This item is of special importance because the people do not realize the insidiousness of the fire tax. You gentlemen can conserve the fisheries, you can conserve the forests, you can definitely go after certain natural opportunities and wealth and preserve them for the people by process of law, without great co-operation on the part of the people themselves. But such is the character of the fire waste that you cannot do that, you can practically do nothing without the co-operation of the people, and the feeling of the

people in the United States—and I fancy the consciousness is not very different in Canada—is that the fire waste does not affect them. They do not appreciate how the burning of created resources touches their pocket books. For this reason you have the enormous problem of educating the man in the street.

**Fire Tax
Concealed in
Price of Goods**

The merchant, the manufacturer, the men who handle large stocks of goods, realize that their goods are insured, and they add the cost of the insurance to the goods and pass it on to the people; and whoever buys a hat, or a pair of shoes, or a suit of clothes or anything that goes through the channels of production, distribution and exchange, pays that fire tax, but it is concealed in the cost of the goods. It is indirect taxation. Now, you will agree, it is so : undertaking to educate the people of this country to that fact, because they will have to see, first, the economic sequence—to see it clearly by the most elementary sort of examples. Take cotton, as an illustration. Cotton is insured in the sheds in the south, it is insured while on the railway platform, insured while in transportation, insured in the textile factory, insured in the warehouse, insured in the local dry goods store—all the way along, from the cotton field that cotton bears an accumulative fire tax, and when we buy cotton goods we pay it—included in the cost of the goods. It is the same with wool, from the back of the sheep to the clothes we wear, that tax is added.

**Insurance
Companies only
Collectors**

The difficulty is to make people who do not know understand that there is a fire waste. They will read most placidly fire reports without any reaction of intelligence. We see men in business life, who will read a fire report of \$200,000 loss, and then look only to see if the property was insured. If it was insured, they will dismiss the matter from their minds as something not concerning them, as something that the insurance companies must bear. But how could the insurance companies pay \$218,000,000 a year and remain solvent? They are merely the collectors and distributors of this tax, plus the expense of carrying on their business, which is considerable. That is the great problem you must meet and you must get your people to understand. In the United States we have been at it for twenty years, and as yet have made very little progress, because of the difficulty of reaching the people. You can reach some of the people through manufacturers' associations, Canadian Clubs and other organizations that have the welfare of the Dominion at heart; but with the ordinary man, who is unorganized, and whose habits with fire are reckless—the most reckless in the world—it is difficult to accomplish anything.

**Carelessness
with
Matches**

We put ashes into wooden receptacles and clutter up furnace rooms with all sorts of rubbish. Fires continually occur from carelessness with matches—we find them everywhere, even in the linings and pockets of old coats. In Europe, however, if you want a match, you have to go to where it is kept, in its proper receptacle. See the man in an American hotel lobby, how careless he is. He lights his pipe or his cigar, and probably from some sub-conscious feeling that he should be careful, he casually shakes the match a little and then throws it away; it may be out or it may not. Then, too, our people seem to have lost the faculty, if they ever had it, of being impressed by an ordinary fire. A \$100,000 fire in Europe shocks Europe. It at once precipitates inquiries as to who was responsible and whether the thing could possibly be duplicated. A \$100,000 fire in Europe shocks Europe; but, if we pick up a morning paper and we do not find two or three such fires we think it has been a dull evening! We are not impressed by any fire that has a mere commercial consequence or property loss, and we need something like the Asch building disaster (Triangle Waist Co.) or the Diamond candy factory fire, where many lives were lost, to impress us at all. But this continual daily blaze and consequent impoverishment of our people, to the extent of \$218,000,000 a year, is the problem we have to meet, and to meet as quickly as we can. We, in the United States, pay for your fires, you in Canada pay for ours. In this tremendous economic matter, insurance companies cannot confine themselves to any particular locality; no city or province can cut itself off from the comity of other cities and provinces. It is an international proposition, and the insurance companies that do business in the United States mostly do business in Canada as well. We are all one people, in the matter of stopping this tremendous drain, because the collectors and distributors of the tax are international. So it is our common problem. As I said, the people are blinded by the notion that the insurance companies pay this colossal tax. If the insurance companies received their revenues from Mars, or Jupiter or some remote planet, we could afford to be indifferent; but it is obvious that they have no way of getting money except by assessment of all losses right back on us. Whenever a man has a fire unnecessarily, it is an unneighbourly act, because he picks our pockets and lays us all under assessment for what he may be pleased to call his misfortune. Undoubtedly, in the United States, we have taken up this matter of fire prevention much too late; we ought to have taken it up when the Pilgrim Fathers landed at Plymouth! But we are making up for lost time—we are educating people in the public schools, we are sending literature broadcast, and are now getting the rather tardy support of American newspapers. The editors did not realize there was any such problem until about ten years ago.

**Gradual Change
in Public
Opinion** Gradually we are getting public education under way, but the impatience of the American business interests with this tremendous drain under present conditions has become so great that they are apparently willing to adopt the European method, namely, of holding a man as a public offender who has a fire, unless he can prove that he was not responsible for it. In France, if a man has a fire and it goes outside his premises and damages his neighbour's property, he has to pay his neighbour's loss. That is very educative! In Germany, if you have a fire, the first person who calls to offer condolence is the policeman. He locks you up, and you have to go before a court and prove that you were in no wise responsible, either by neglect or purpose, or you have to pay the cost of the fire and pay the city for the cost of extinguishing it as well. It is that penalty which is appealing to the imagination of the business man in the United States to-day—to assess the cost of fighting the fire on the man who has a preventable fire, especially if he disobeys any fire prevention or fire department order.

**Responsibility
for Disobeying
Order** Already, in New York, such a case has been decided, and, as it is very typical and interesting, I wish to tell you of it. The Greenwood Cemetery Company has a large building in New York. That building was in very hazardous condition, and the fire department issued an order for its protection by automatic sprinklers. The company ignored the order and a fire occurred. Fire Commissioner Adamson then brought suit under a clause in the Greater New York city charter, which had never been invoked, although it had been there for fifty years. The clause said that if a man disobeys an order given by the fire department he shall be responsible in the event of fire for the cost of extinguishing, or attempting to extinguish, any fire that may result. The Inferior Court in which the case was tried, being imbued with the idea that every man having a fire was an unfortunate, and that, if he does not soak anyone but the insurance company, nobody cares (not knowing that we pay it ourselves!) ruled that the Fire Commissioner had no case. The Fire Commissioner appealed to the Superior Court, which reversed the judgment of the Inferior Court, and awarded \$1,500 damages against the company. It was a bad fire, and some of the firemen were severely injured. An order was issued against another establishment and they ignored the order and had a fire. They settled for \$1,000 without going to court.

**Personal
Responsibility for
Cost of Fire** The State of Pennsylvania has passed a law, and it is now in effect, that, in cities of the second class, a man who disobeys a fire department order shall be responsible for the cost of extinguishing any fire which may result. The city of Cleveland

has done the same thing by city ordinance. So it is already recognized in the laws of some states, that a man who disobeys an order, and has a fire, must bear the cost of extinguishing that fire, or attempting to extinguish it, and any injuries that may occur to firemen. Such an enactment seems rather drastic to some of us, who have grown up in the idea that we can burn our own property and that of our neighbors, without any responsibility, merely offering our condolences or expressing our regrets!

SUGGESTIONS TO MEET CANADIAN CONDITIONS

I think that, perhaps, before the Canadian people are successfully educated in this matter, you gentlemen may also come to this conclusion that it is perfectly just and proper, if a man has been told by the proper official to clean up his basement, which may be filled with boxes, excelsior, and other inflammable material, and he ignores the order and has a fire, he should be made to pay the municipality the cost of extinguishing that fire. It is possible, however, that in undertaking this work, you may avoid certain aspects of the problem with which we are confronted in the United States, and I wish, as briefly as possible, to indicate what, in my mind, and from our experience, you may do in Canada, and do quickly, as your country is not yet as populous as ours.

Provincial Fire Marshals

There are two main factors, things you can do by education and things you can do by legislation. In the first place, I think Canada should have a fire marshal in each province, who shall be a statistician and an educator and also a prosecutor of arson. He should have these three functions. You now have fire marshals in several provinces. Ontario in 1914 passed a Fire Marshal Act, and a fire marshal has recently been appointed. That is a good beginning. Each province should have such an official. Then you should have a standard minimum building code for Canada. There are acres of wretched construction in the United States. We have hundreds and hundreds of homes that, although the buildings are of wood, might easily have been made reasonably fire safe. These buildings are erected with the partitions open, without any fire stops, so that the first you know of a fire that starts in the basement is when it breaks out through the roof. The house is a mere shell, and, with a draught in the partitions, the fire may pass quickly from basement to roof. The well-constructed frame building to-day is fire-stopped at each floor, so that fire can more easily be confined to the basement. I have no doubt that Canada is full of such wretched construction, because it has been the policy in America to build of wood, without any regard to the conservation of wood. I shall not go into the subject of forest fires. These statistics I have quoted are in reference to the destruction of created

resources only, and do not refer to forest fires, which latter constitute another great drain and waste in both countries.

Standard Building Code

A standard building code should not be so detailed as to embarrass local architects and builders; but certain specific minimum requirements may be laid down, under which no building shall be erected which does not meet those simple, rudimentary rules of safety. In Massachusetts we have a proposed State building code, by which a city can choose its own class, A, B, C and D, commencing with minimum requirements, and can step up into more severe requirements as the city becomes more settled. It is an automatic application of a state building code which, to me, is exceedingly interesting, because it has not been tried anywhere else in the country that I know of.

Defects in Construction

The main thing in fire prevention, however, is to have certain glaring defects in building construction, such as unprotected floor openings, prohibited. The first investigations of our association, in New England, revealed many glaring defects of this character. The examination of factories was undertaken by a little group of engineers, and they discovered that in practically all buildings the stairways were open, the elevators were open, and belt holes were cut through the floors, so that there were no draught stops. They found lateral floor areas so great that the fire department could have no chance of stopping a fire before it assumed wide proportions. The architects have been rather serious offenders against fire safety. The architect is originally an artist. He sees beautiful facades and creations, but the idea of making buildings fire-safe has not yet occurred to him, so he plans big open light wells from the basement to the roof. We must fire-stop our openings, both laterally and vertically, to repress the spread of fire.

Standardize Fire Protection

Then there should be a standardization of municipal fire protection. I do not suppose you will find in Canada two municipal fire departments alike. The organization will differ, the application of the laws will differ, the equipment will differ in every city. It is so in the United States. We are now attempting to standardize our fire protection and group our cities in fire defense so that the insurance companies may have some idea of the proper basic rate.

FIRE PREVENTION BRANCH OF COMMISSION SUGGESTED

I believe there should be an engineer, in the employ of the Commission, whose specific duty should be to consider the fire waste problem and how to

solve it. Do you know that there is not, in Canada, to-day, anyone from whom a person interested in fire protection or fire waste can get information on the subject except the insurance companies? There is no fire protection engineering staff in the country to whom a municipality or an individual property holder can appeal. In Canada, as in the United States, this matter has been left entirely to the insurance companies as, presumably, the only agency or financial interest concerned with fire waste.

**Independent
Information
Required**

The people must take up this thing themselves and I could not make a better suggestion than that this Commission should have in Ottawa a department with a capable fire protection engineer, whom the cities may consult, independent of insurance companies, and from whom they may secure accurate information. The office should also be the source of a persistent and continuous educational campaign. I think it is very essential that there should be such a source in the office of the Commission, to take up this matter and persistently follow it. That will give the Dominion a rallying point.

**Local Prevention
Commissions**

As a complement to this, I believe that, in every city, and every town for that matter, you can get co-operation through the appointment of a local commission. Any board of trade or any commercial club throughout the Dominion, in any of the cities, might easily appoint a fire protection committee. Nearly all boards of trade in the United States have such committees working locally. But the Commission could definitely start such local committees by going into the towns and picking out in each a capable architect, a capable builder, a capable business man—a group of half a dozen leading men of the town, and appointing them a local fire prevention commission. The fire chief should be the executive officer, because the fire chief is the one most interested in checking fires. He is thinking about it all the time, and if he can call in this group of leading citizens to consult with him, and help him do the things that need to be done for the safety of the city, you will have in every city a little group responsible right to your office, men who will appreciate the dignity of appointment at your hands, and will be willing to study the matter and work out improvements locally in their own cities. They can help to administer the details of the building code after you get it established; they can inaugurate regular inspection by the fire department, so that the housekeeping of the towns may be improved; they may do innumerable things to improve the character of the cities in respect to fire waste. Those are the two suggestions with which I wish to conclude: A fire protection engineer, under the direction of the Commission, and fire prevention commissions in all cities and towns, reporting directly to you and co-operating in your work.

THE CHAIRMAN (Senator Edwards): I personally have had the pleasure of hearing Mr. Wentworth on two or three occasions previously, and his addresses have always been both interesting and instructive, and I am sure that you must all have listened to this address with great pleasure and advantage. I was very much interested in his description of how the individual pays for the fire protection on the cotton from the beginning to the end. The suggestion with regard to the appointment of an engineer to this Commission, as a central point for information, is, I think, a very important matter, and one well worth consideration. Of course, there is a limit to the extent which this Commission can spend money; they can spend only what they get. I think that is one improvement, however, which we should make a great effort to carry out. I heartily concur in what Mr. Wentworth has said. This paper, as in the case of all papers or addresses delivered before this Commission, is now open for discussion. Does any lady or gentleman present wish to ask any questions or make any remarks?

MR. WENTWORTH: I wish merely to emphasize the fact that I realize the finances of the Commission are perhaps not as great as we might wish; and, for that reason, I think the plan of local commissions, entailing no expense whatever, would be admirable for the conduct of this matter.

DR. F. D. ADAMS: I think nothing strikes one who travels in Europe more than the fact that fires so seldom occur. Mr. Wentworth speaks of the state of affairs in France and Germany. I remember that, during the two years I lived in Heidelberg, no fires of any kind occurred in that city of 30,000 inhabitants, nor had there been one for some time before, or after. In fact, the only time we ever saw the fire brigade was when it paraded once a year, on Sunday--I presume, to show it was still in existence. Undoubtedly the one great thing necessary here, and in the United States, is the education of the public in reference to this matter. Only two or three weeks ago I was asked to speak on the preservation of our resources, at a Forum gathering of workmen and others, in the poorer parts of Montreal. I spoke more particularly on the conservation of our buildings, etc., from fire, because that was a phase of conservation which, perhaps, appealed more directly to them. It was very interesting to note the attitude of some of the speakers. One man said he considered that fires were not an unmixed evil, because they gave work to the workman in building up the houses again. I suggested, in order to give his view full and complete effect, and to bring about the result he wished to obtain to the greatest extent, we might make a rule to burn down the cities once a year. As everyone laughed, he was quite indignant, and said I had exaggerated what he had said and made him appear ridiculous. That general idea has a certain prevalence among our people. A lady made a very rational suggestion. She said she had lived in

France and one reason for the rarity of fires there was that people were more careful with matches, because the heavy tax on them gave them a distinct value. Possibly the adoption in Canada of a similar system of taxation would not be altogether ineffectual.

SENATOR EDWARDS: As a result of an address by Mr. Wentworth, delivered in Ottawa, before the Canadian Club, in November, 1913, a Fire Prevention Association was formed in this city. That association has already done a lot of good. "Clean-up day," in May, is one of the results of its formation, as also the examination of premises, basements, etc., for bad fire conditions. There is no question but that the Association has done a great deal of good.



APPENDIX

Fire Waste Facts and Figures

During the five year period ending December 31st, 1914, 31,400 fires, exclusive of forest conflagrations, destroyed Canadian property valued at \$115,000,000.

This destruction of our national wealth averages 23,000,000 per annum, or over \$63,000 daily, and equals:

3.5	per cent.	of the total value of Canada's	Agricultural Field Crops.	
9	"	"	"	Steam Railway Earnings.
13	"	"	"	Forest Production.
14	"	"	"	Consolidated Fund Revenue.
17	"	"	"	Mineral Production.
19	"	"	"	Paid-up Bank Capital.
74	"	"	"	Fisheries Production.
77	"	"	"	Electric Railway Earnings.
143	"	"	"	Gold Production.
153	"	"	"	Silver Production.
176	"	"	"	Net Postal Revenue.

If the annual expenditure upon fire protection and insurance is added to the value destroyed, fires cost Canada directly and indirectly as follows:

	Investment in Construction & Equipment	Annual Loss & Expense
FIRE LOSS		
Annual Fire Loss (average of five years)-----		\$23,000,000
INSURANCE PROTECTION		
Amount of Fire Premiums in excess of Losses paid -----		13,500,000
WATERWORKS		
Total cost of waterworks chargeable to Fire Service -----	\$24,500,000	
Supply and Distribution -----	\$22,050,000	
Hydrants -----	2,450,000	
Total Annual Expense of Waterworks chargeable to Fire Service -----		3,035,000
Depreciation and Taxes-----	\$1,225,000	
Interest Charge -----	980,000	
Maintenance -----	830,000	
FIRE DEPARTMENTS		
Total Cost of Fire Departments—Buildings and Equipment -----	10,975,000	
Total Annual Expense of Fire Departments-----		5,797,125
Depreciation and Taxes on Buildings and Equipment -----	\$ 823,125	
Interest Charge -----	439,000	
Maintenance -----	4,535,000	
PRIVATE FIRE PROTECTION		
Total Cost of Private Apparatus and Protective Systems -----	11,500,000	
Total Annual Expense -----		4,356,000
	\$46,975,000	\$49,688,125

COMMISSION OF CONSERVATION

Rates for insurance in Canada have averaged during the last three years \$1.22 per \$100 insured. The average rate in Sweden is 40 cents, in Austria 30 cents, in England 23 cents, in Germany 22 cents, in France 21 cents (est.), in Spain 19 cents, in Italy 19 cents.

The reason for the difference is obvious when fire losses are compared as in the following table:

CANADIAN CITIES, 1914

	Alarms	Loss	Per Capita Loss	Alarms per 10,000 Pop.
Saskatoon -----	182	\$ 301,719	\$12.07	72
Fort William -----	144	190,008	7.91	60
Vancouver -----	642	677,801	6.77	64
Halifax -----	270	316,200	6.73	57
Brockville -----	47	42,786	4.74	52
Port Arthur -----	180	81,530	4.53	45
Chatham -----	63	50,547	4.20	52
London -----	264	200,457	3.64	48
Quebec -----	662	290,301	3.62	82
Ottawa -----	522	342,792	3.38	51
Montreal -----	3547	1,800,000	3.27	65
Stratford -----	52	50,457	3.15	32
Toronto -----	2137	1,457,279	3.10	45
Hamilton -----	433	312,314	3.09	46
Belleville -----	39	34,000	2.83	32
St. Thomas -----	77	45,081	2.80	48
Winnipeg -----	345	491,213	2.34	17
St. John -----	247	140,000	2.33	23
Edmonton -----	550	159,643	2.20	76

FOREIGN CITIES, 1914

	Alarms	Loss	Per Capita Loss	Alarms per 10,000 Pop.
London, Eng. -----	6125	\$2,750,000	\$0.60	13
Leeds -----	298	377,080	.84	6
Sheffield -----	382	110,950	.23	7
Bolton -----	63	175,745	.93	3
Cardiff -----	168	99,770	.55	8
Lancaster -----	12	1,490	.04	3
York -----	35	6,740	.08	4
Belfast -----	164	181,385	.46	3
Dublin -----	251	78,250	.22	6
Bordeaux -----	391	158,958	.61	15
Marseilles -----	500	433,528	.79	9
Paris -----	4366	1,730,943	.61	15
Florence -----	193	40,132	.17	8
Milan -----	988	320,104	.48	16
Christiana -----	388	121,386	.48	16
Madrid -----	820	92,000	.15	13
Stockholm -----	735	206,752	.54	18
Basle -----	91	27,993	.19	6
Tokio -----	521	684,346	.34	2



