



# STATENS BRANDINSPEKTION

Meddelanden

1956:13 A

The National Fire Service Inspectorate  
Informative Recommendations 1956:13 A

## THE SWEDISH FIRE CONTROL ORGANIZATION.

### Geographic, Economic etc. Data.

The area of Sweden extends from Lat. N.  $55^{\circ} 20'$  to Lat. N.  $69^{\circ} 4'$ , i.e. for some 1,574 kilometers in a north-southerly direction, which of course implies rather varying climatic, economic and other conditions. The entire land area, lakes excepted, occupies abt. 410,000 square kilometers.

The population numbers some 7.3 millions whereof the majority residing in the southern and middle parts of the country. The capital, Stockholm, excepted, with its roughly 800,000 inhabitants, abt. 80 % of the population is resident in the southern-most third part of Sweden, while the remainder, 20 %, lives in the northerly two-thirds of the country.

The wooded area, mainly coniferous, occupies 56 % of the land. In the north, there are roughly 43 acres of wooded area per capita, in the south abt. 1 acre, 1 rood.

The forest products, inclusive of pulp and paper, constitute the very biggest and most important part of Sweden's exports. As regards the lumber and pulp exports, Sweden ranks second to Canada only, lumber exports being slightly more than 40 % of Canada's, whereas pulp exports practically reaches the Canadian figure. The wood-based exports represent between Sw. Crs. 3,000 to 3,500 million a year and much work has of late been devoted to products based on wood chemistry. Iron ore is being exported to the value of Sw. Crs. 750 to 1,000 million yearly, and exports of machinery and other metal manufactures, inclusive of autocars and ships, are very nearly approaching the value of the wood-based exports.

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The standard of living is high. It may be significant that as compared with the number of inhabitants, the telephones are more numerous than in any country, and as regards the percentage of automobiles, Sweden comes second to the U.S. and Australia only.

The population is about equally divided between the 133 Towns.-the biggest of which are the Capital, Gothenburg (abt. 375,000 inhabitants) and Malmö (in excess of 200,000)- on the one hand, and 93 Boroughs, "köpingar", 138 Urban districts, "municipalsamhällen", and 811 Rural districts on the other hand.

The taxable value of the aggregate real estate - landed, wooded and house property - amounts to some Sw. Crs. 77,000 million.

Wood is still rather extensively used especially for smaller structures. The percentage of wooden residences according to an official survey in 1945 was roughly 10 % for the Capital, 90 % for rural, and 80 % for all other communities, and in the entire country, there were at that time roughly 2 million wooden structures as against 1 million of other materials, i.e. two thirds of all the structures were of wood. In the meantime, however, the percentage will have changed somewhat.

#### Fire Losses:

The fires average some 20,000 a year, i.e. abt. one fire per 370 individuals (e.g. in the U.S. the last figure seems to be one fire per 270 inhabitants), and fires are causing abt. 100 deaths a year.

The industrial fires represent a substantial part of the damages, averaging some 40 % up to 1955, when they rose to 45 %, and further during 1956 to roughly 50 %.

The year 1955 was characterized by an exceptionally long and continuous period of drought. The direct fire damage rose by some 30 %, i.e. from the usual Sw. Crs. 100 million to 132 millions. The number of deaths soared to 150, while the percentage of damage by industrial fires increased to abt. 45 %. Eleven big industrial fires were responsible for roughly 20 % of the aggregate fire damages of 1955.

The forest fires are not included in the above figures. There is a great number of rivers, lakes and marshy lots interspersed throughout the large wooded area, and partly on this account it has as a rule

been possible to keep down the number of forest fires at the comparatively unimportant figure of some 1,000 a year, three quarters of which cause less damage than 0,25 acres. Aggregate damage a year amounts to some 400 - 450 acres. The yearly direct damage for the last decade has averaged slightly less than Sw. Crs. 400,000 a year. In the course of 1955 however, doubtlessly to a great extent because of the continuous drought, both the number of forest fires and the damage caused were increased by approximately 150 % above the average.

#### Fire Control Organization:

In the course of the period from 1937 to 1944, the efficiency of the Fire Control Organization was very much increased. The number of Fire Services was increased from 1,100 by 150 % to some 2,750, and great numbers of fire pumps and other appliances, hose etc. were procured by the Government for the municipalities. The present Fire Laws date from 1944 and, pending a revision, the present protective organization can be summarized as follows:

According to both ancient and recent laws, every Swedish ablebodied citizen, from 15 to 65 years of age, is legally obliged to assist in the putting out of any escaping fire, be it forest fires or otherwise. Failing this, he will be liable to a certain fine.

For administrative purposes, Sweden is subdivided into 24 Counties, "län", and the County administration is by law in charge also of the fire protective organization of the county, having on its staff for the supervision a County Fire Inspector, mostly the Fire Department Chief of the principal town of the county. Every Municipality administration is by law required to possess codified Fire Regulations, subject to approval by the respective County administration, and also to elect, usually for a period of four years, a local Fire Service Board.

This Fire Service Board has to elect a Fire Chief, staff, inclusive of Deputy Chief(-s), and personnel, and in co-operation with the Fire Chief ensure that the requisite facilities for the elimination of fires are available and in proper order. The financial responsibility rests with the Municipality.

The structure of Fire Services is at the present time made up as follows:



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In the larger towns, about 55, there are basically Fire Departments with permanent, whole-time personnel, and in addition, especially in the outer suburbs, retained, part-time call men, in all slightly in excess of 4,000. In the smaller towns, boroughs etc., to the number of some 160, the Fire Departments are manned by retained, part-time call men, say some 5,000, though in many instances one or more officers may be whole-time. The rural districts having Fire Departments of their own, about 560, also have Fire Brigades of retained, part-time call men. The Fire Services of some other 260 rural districts consist of volunteers, unpaid except for training and service hours. The number of men in the rural brigades adds up to some 24,000 in all. Lastly, there are some 700 Military, or Private Fire Brigades of many industrial enterprises of the larger order, which may comprise a certain number of whole-time men.

This makes some 1,750 Fire Departments in all, but then in the larger towns - and rural districts - there may be a number of sub-stations and detachments. For instance, in the capital, Stockholm, there are 7, and in some communities in the north, having an enormous area, there are even more, which increases the number of Brigades to some 2,500, not counting the very smallest detachments having at its disposal, say, a motorized, portable fire pump and a couple of hundred yards of fire hose. In the extreme north, with its very great distances, there has to be such small squads even in very small villages.

Not long ago, there were still some 1,000 more of the unpaid (i.e. no retainer) Voluntary Brigades in existence, but most of them have been transformed into and superseded by retained, part-time call men, which as often as not are lodged in or in the nearest neighbourhood of the Fire Stations.

In addition to the above-mentioned forces, there are also emergency Reserve Forces, based on the ancient civic duty to assist in fire emergencies. The composition of the Fire Department, the manning of the Station etc. is prescribed in the respective Fire Regulations, "brandordningar", in accordance with the size, population and fire load of the district. The part-time personnel, also elected for a four-year period, is paid a salary, fixed by agreement between the trade organizations of the said forces and the municipal administrations, and varying in accordance with the extent of station duties between, say, Sw. Crs. 1,000 to 2,000 a man and year.



When partaking in the extinction of fires outside of their own industrial premises, the Private Fire Brigades are under the command of the respective Municipal Fire Chief.

Smaller communities may, subject to the approval of the County Administration, co-operate for the formation of joint Fire Services, or they may delegate and pay for the responsibility to a neighbouring Municipality, or possibly even to a private Industrial Fire Service of outreaching capacity.

In case of need, Municipal forces are by law required to render assistance to each other.

In any community, part of the General Purpose Reserve Forces consists of a special Forest Fire crew, consisting of a specified number of Firemen, Foremen, and Callers for spreading the alarm, and - eventually - one or more Deputy Forest Fire Chiefs. The supreme command of the Forest Fire Fighting Crew is exercised by a Forest Fire Chief. This office may be held as a joint function by the regular Fire Chief, but especially in communities possessed of a more extensive forested area, it may be held by a special officer.

There is a National Fire College at Stockholm for the tuition of officers and would-be officers of the fire profession, and chimney-sweeps. There are different courses for Fire Chiefs (Deputy Chiefs) for Station Officers, and for Foremen, and the college degrees are each subdivided into three categories.

As regards the towns, for the regular, whole-time forces the respective Category I degree is as a rule required for Chiefs, Station Officers and Foremen, whereas for the Retained Brigades as a general rule the Category II degrees are considered sufficient. In rural districts, for the Fire Chiefs a Category III degree is a minimum requirement, and such courses are arranged locally by the Fire College.

For the admittance to the Category I and II courses, in addition to a varying degree of preliminary school education also preliminary practical service and training is required, and the Fire Chief courses at the college are interspersed by periods of practical service. A complete Fire Chief Category I course has a duration

of abt. 18 months. Other courses are of shorter duration, down to e.g. 3 weeks for Category III, same duration as special courses for Fire Chiefs of Private Industrial Brigades. For officers of the Forest Fire Crews, locally arranged special courses are compulsory.

Nor as regards the courses for chimney-sweeps are any freshmen admitted. For the journeymen courses, a preliminary training of 4 years, and for the master courses, a journeyman certificate plus an additional service of 2 years are requisite.

The Swedish Government, up to the year 1951, has participated, by State grants, to a considerable extent to the Municipal, peacetime supply of fire appliances, engines, hose etc., and is still participating towards the erection of adequate Fire Stations and a network of water reservoirs and ponds. A network of some 300 Watch Towers for Forest Fire Detection is entirely manned and maintained by State grants. Furthermore, the communities are also recompensed to a large extent for actual expenditure, hose wear etc. incurred in connection with the putting out of fires, viz. as regards forest fires by State grants, and as regards other fires, especially in the rural communities, by the fire insurance companies.

The yearly cost of the Fire Services is slightly in excess of Sw. Crs. 80 million, i.e. roughly Sw. Crs. 11.- per capita, higher in the towns, lower in the rural districts. Since the Fire Underwriter Companies started on a larger scale their schedule of rates has come down very considerably, and whereas such reduction is not entirely due to increased efficiency of the Fire Services but also to fire preventive measures generally, it is estimated that if the original premium rates would have had to be maintained at present, this would have meant an additional Sw. Crs. 350 million, and in consequence the cost of Sw. Crs. 11.- per capita may be offset by a saving in premiums of very nearly Sw. Crs. 50.- a year.

For the supervision of the Fire Control Organization, there is, as before mentioned, a County Fire Inspector attached to each County Administration, and also a County Forest Fire Inspector.

The supreme supervision, for the entire country, is since 1944 vested in an Inspector General of Fire Services. His office and



staff, the National Fire Service Inspectorate, "Statens brandinspektion", are part of the Civil Defence Administration, and matters appertaining to economics or Civil Defence are being dealt with through the intermediary of the said Administration, other matters by the Inspector General or the Inspectorate direct.

The contacts are in the nature of counsels and suggestions rather than decrees. For instance, model codified Fire Regulations are issued by the Inspector General, but a municipality is not obliged to adopt these in every particular. A set revised according to local conditions may be sanctioned by the respective County administration, after being submitted for approval to the Inspector General.

There is a great number of matters to be dealt with in connection with the regular fire safety inspections and chimney sweepings as prescribed by the Fire Regulations. Also the regulations for town planning, building and heating give rise to a very great number of consultations and decisions. And series of printed Recommendations, "Cirkulär" resp. "Meddelanden", dealing with various actual problems, are being edited by the office of the Inspector General and distributed to Fire Brigades, associations connected with the fire safety, administrative authorities and to a certain extent also abroad to persons and institutions reciprocating in the same way.

The Inspector General is a member of the Board of the National Fire College, of the several Fire Protection committees and associations, and generally a representative of the Swedish Fire Protection in international matters.

According to the instructions issued by the Home Office for the Inspector General, the duties comprise the supervision and standardization, as far as possible, of matters appertaining to the entire Fire Control Organization, peace-time as well as war-time, and furthermore, to keep up with the scientific and technical evolution of such matters, be it abroad or otherwise.

The lastnamed requirements entail quite a lot of research work, testing and adapting, but whereas there is as yet no special Institute for the purpose, such work has got to be taken up and conducted in conjunction with a number of official, semi-official and even private institutions, e.g. the Civil Defence Administration, the Swedish Academy of Engineering Sciences, the National Board of

Building and Town Planning, the National Inspectorate of Explosives and Flammable Liquids, the National Testing Institute, the Rural Fire Protection Committee, the Swedish Fire Protection Association etc., and of course with the Association of Swedish Fire Brigades. As regards the activities of the lastnamed Association, it publishes a Monthly with a circulation in excess of 13,000, and has got a staff of consultants paying some 3,000 visits a year to the different Fire Departments and effecting some 3,500 recorded Fire Pump inspections. Furthermore, some 70 different training courses a year, attended by some 1,500 firemen, and some 40 meetings for discussing various technical and other matters of interest, attended in all by some 2,000 members, are arranged.

Instruction courses play a prominent part also among the many-sided activities of the Swedish Fire Protection Association. Such courses, with demonstrations, posters and picture films, are continuously being held for the various industries, e.g. metal and wood industries, cutting and welding, building, plastics fabricating and manufacturing etc., for children and home protection, in schools etc., and for policemen, architects, chimney sweeps, electricians etc. The Association works in close collaboration with all official and semi-official institutions concerned, with the Fire Underwriters, and with the other Scandinavian Fire Protection Associations. There are special departments dealing with fire danger from electricity, plastics and farming activities, the investigation of arson etc. Also this Association publishes a Monthly with a wide circulation, and a number of leaflets, folders, posters and picture films.

Anyhow, a collaboration has been established in this field between the Scandinavian countries, in especial, and regularly, between their respective Fire Protection Associations. There is also a close collaboration with the Comité Technique International de Prévention et d'Extinction du Feu (CTIF), and since 1946, Sweden has been represented in this Committee by the Inspector General of Fire Services. Furthermore, the Insurance Companies have been devoting large sums of money to research work. They have paid for special equipment for the Government Testing Institute, mainly devoted to structural research for Building Regulations, and contributed foundations devoted to different kinds of research in the Fire Protection field.

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