

thin glass and their window frames of wood. At Baltimore and San Francisco the conflagration attacked such buildings easily; breaking out the panes; consuming the frames, and converting every story of these brick structures into horizontal flues full of combustible contents. Brick and stone buildings are logical and capable fire-stops if the fire can be kept out of them. The small city that will trace out its Maltese cross of such buildings and equip them with metal window frames and wired glass will immediately possess the equivalent of substantial fire walls crossing at right angles in its centre, dividing it into four sections. By such a simple, inexpensive, but yet strategic procedure many a city may save itself from the destruction which now awaits only the right kind of a fire on the right kind of a night.

#### PROTECTED WINDOW OPENINGS.

It is obvious that this form of protection is equally imperative in the brick, stone and concrete districts of all large cities where great values are housed in close proximity. Fires in the large cities entail an enormous waste because of the great values assembled there. We must come eventually to the equipment of all commercial, factory and office buildings with metal window frames and wired glass. This will mean the abolition of the conflagration hazard in our cities. Fires will then be unit fires, extinguished easily by a competent fire department within the building in which they originate; for the protection of window openings not only prevents fire from entering but prevents fire from issuing from the burning building. We may expect an occasional exceedingly hot fire to break down the defences of an adjoining building, but it is obvious that a conflagration could not get under way among buildings of fire-resistive construction with properly protected window openings.

Having thus fortified city buildings one against the other, extensive fires within individual structures can be prevented by the use of the now well-established automatic sprinkler system. The automatic sprinkler applies the water without the help of human agencies while the fire is still incipient. It will operate in a dense smoke as well as in a clear atmosphere. It will not throw excessive deluges of water in wrong places as the fire departments are continually forced to do. With our window openings protected and our buildings equipped with such extinguishers the conflagration hazard in mercantile districts will be eliminated. There will then remain for consideration our immense residence districts constructed almost wholly of wood surrounding the mercantile centres, like fagots around a funeral pyre. We can lessen the loss here by the abolition of the use of wooden shingles.

#### DANGER OF THE SHINGLE ROOF.

The prohibition of the shingle roof, which is now generally recognized as a conflagration breeder, is to-day almost universal within city fire limits, and from the more enlightened communities it is excluded altogether. Burning shingles can be carried great distances by the wind or draught of a conflagration, and when they may alight in their turn upon other dry shingles, they make fearful havoc. The natural anarchy of the American temperament does not readily respond to admonitions to correct its careless habits and recognize its public responsibilities, but

our common impoverishment by the stupendous proportions of the fire tax is beginning to impress itself upon us so forcibly that even the most heedless of us is forced to give some thought to the common good and the common safety.

It will not be necessary to remove all shingle roofs immediately. An effective city ordinance might require all roofs constructed in the future to be of incombustible material, and that all roofs which shall hereafter require repair to the extent of one-third of their area shall be replaced with incombustible roofs. The modern shingle is thin and the machinery which now makes it leaves a fuzzy surface which, after a period of drought, becomes like tinder. Without shingle roofs flying brands would not be carried over the brick centres of the city by the wind.

#### RESPONSIBILITY OF THE PUBLIC.

Outside of the abolition of the shingle roof, we must look for the protection of our homes to the corrected habits of our people. We must look carefully after the heating apparatus of our homes, giving them the constant and necessary attention demanded of receptacles containing fire. The building of proper flues and chimneys is especially necessary in connection with residences. The most vital matter in the home, however, is the proper use of the match. Every match is a potential conflagration, as every fire is of the same size when it starts.

No match should be admitted inside a home except the variety which ignites only on the box. Hundreds of women and children are burned to death in America every year by the type of match which will ignite on any surface. These matches are allowed to lie indiscriminately about the homes. Small children are imitative, and if they can secure such a match, will attempt to ignite it, generally setting fire to their clothing. No father who has proper regard for his family will allow a "strike anywhere" match in his home. The observation of the precaution I have indicated would mean an almost immediate reduction of the fire waste by perhaps fifty per cent.

#### INSPECTION BY FIREMEN.

The mental habits of a people are a vital factor in effecting social progress. It is the mental habit of our people to assume that fire departments are maintained for the exclusive purpose of extinguishing fires. It is obvious, however, that fire departments have large possibilities for service in preventing fires; a service which is, I regret to say, yet largely potential. Every fireman, from the chief engineer down to the drivers and pipe men, should be regularly detailed for inspection service. Three or four hours a week for each man, going into basements, attics, courts and alleys, keeping down accumulations of rubbish—which spring up over night—locating the storage of inflammable oils and explosives, would keep the city clear of its most persistent fire dangers. Every fireman should in turn cover every section in the course of six months. One would thus check up the inspections of the other, and local conditions would become a matter for educative conversation about headquarters.

There is, however, a most important result to be achieved by such an inspection system over and beyond keeping the city clean; and that is the education of the fire-fighters in the exact physical character of the city. To know exactly which passageways