

Spontaneous Combustion Fires.

There are sceptics who refuse to believe in spontaneous combustion causing fires. The evidence however is too conclusive to be set aside in support of their being certain products which generate heat without any direct contact with anything which has been ignited. This heat, under favourable conditions, becomes more and more intense until the combustion degree is reached, when that which has set up this action proceeds to consume itself and communicate fire to its surroundings. A paper recently read before the Warehousemen's Association of New York by Mr. Albert M. Reed gives the following information regarding various oils as agents of spontaneous combustion.

Drying oils, like linseed and poppy-seed oil, appear to be more quickly acted upon by the air than non-drying oils, like olive oil, cottonseed oil, and the animal oils and fats. This latter class appear to require time to become rancid before the air will act upon them energetically at ordinary temperatures. It has been shown, however, that all vegetable and animal oils will spontaneously ignite in a comparatively short time at temperatures only slightly above the ordinary summer heat. For instance, when exposed in a chamber to a temperature of from 130 to 170 degrees F. :—

Boiled linseed oil on cotton waste ignited in 1 1/4 hours. Raw linseed oil on cotton waste in 4 hours. Lard oil on cotton waste ignited in 4 hours. Colza oil on cotton waste in 6 hours. Olive oil cotton waste in 5 hours. Sperm oil on cotton waste in 4 hours. Castor oil on cotton waste ignited in 24 hours.

Mixing above with 20 to 50 per cent. mineral oil presents ignition even when the temperature is 200 degrees F.

Furniture polish and some varnishes containing oils will spontaneously burn when in a finely divided state on rags or waste. Oiled clothing, when packed in large piles, has been known to take fire. Cotton, baled, ignites spontaneously when, through the breaking of the seed in the process of ginning it, the fibre is saturated with the oil. Hay, when put into the mow insufficiently cured, will become heated probably from fermentation, and finally burn. Baled hay, stored in large quantities while damp, has been known to burn. Silks, weighted and black-dyed, are liable to take fire spontaneously when rolled tightly in large rolls, or piled closely together soon after coming from the dye-house. This is probably due to chemical action between the elements that go to make up the filling and the dye. Cotton cloth, black-dyed, has been known to ignite from the same cause when not thoroughly washed after coming from the dye-vats.

Charcoal, an extremely porous body when finely divided and kept in large masses, absorbs or con-

denses air and moisture in sufficient quantities and with sufficient rapidity to, under favorable circumstances, ignite it. An instance is mentioned where several tons of charcoal broken into small pieces and thrown into a heap about four feet high increased in temperature from 57 degrees F. to 150 degrees F. in six days, and began to burn on the seventh day. There is no mystery about this. Heat, fire and flame are merely chemical phenomena, which are produced whenever the required conditions exist.

Mr. McClintock on the Polley for Abstainers' Question.

Mr. Emory McClintock, the chief actuary of the Mutual Life, has given his opinion in regard to the relative value of the lives of abstainers and non-abstainers from a life assurance point of view, based upon an investigation of the experience of that company. Mr. McClintock says: "The non-abstainers heretofore discussed include a certain proportion of men who stated on entering that they drank "beer only." The total maximum expected loss upon this class was \$344,124, and the actual \$795,100, or 94 per cent, against the 96 per cent. first found for non-abstainers generally, and the 78 per cent, found for the abstainers. Separating those who stated that they drank some sort of alcoholic beverage, but did not say "beer only," the percentage is 97. It is scarcely correct to base minute conclusions upon a small difference of 3 per cent., when a single loss of \$8,000 more or less among the beer drinkers would have made a difference of 1 per cent. one way or the other."

This eminent actuary is reported in the "N. Y. Chronicle" as having said :—

"There is no reason to distrust the general result of this investigation. It coincides with all previous reasonable belief and expectation. It does not show that those who drink only occasionally and not to intoxication, or those who drink habitually but lightly, are in any way injured. It does not show that all of those who drink heavily must therefore necessarily die prematurely. It does show, however, that there is enough injury done to a sufficient number of individuals to make the death loss distinctly higher on the average. Again, it is admitted that death losses in excess among drinkers are not necessarily always due to drink. The coincidence between excessive drinking and lowered vitality may be partly due to bad risks taking to drink as well as to good risks becoming bad because of drink. On the whole, however, the teetotal habit, not only before but after middle age, must be counted as a favourable indication, in judging of proposals for insurance from persons not known to be careful and moderate in the use of beverages."

Our friends of the Temperance & General will find considerable comfort in Mr. McClintock's judgment.