oxygen to support combustion without any addition from the atmosphere.

Fires caused by elements introduce the subject of spontaneous combustion. Spontaneous combustion is the ignition of a substance by chemical reaction without the application of other heat or of flame. Practically every chemical action as well as every use of force produces heat. Every one knows that a nail will become heated if quickly pulled from a piece of wood.

In this connection there are three principal classes of substances. Those rich in oxygen which they are eager to give up. These substances remind me of political parties—one party is always trying to fasten something on to the other party. Nitrates are good examples of this class.

Then there are substances which have a strong affinity for oxygen which may be absorbed from the atmosphere or from other substances. This affinity business is always a source of danger between substances as well as between human beings. Prominent in this class, are the vegetable and animal oils. Iron filings, wet powdered charcoal, oiled clothing in piles, clover and alfalfa hay put away green, roasted coffee are only a few of well known substances which have an element of danger from spontaneous combustion The danger from oils is not in bulk, but when distributed over finely divided or fibrous substances like saw dust and rags and especially so when covered up so as to confine the heat produced by the chemical reaction.

In his book "Fire Insurance and How to Build," Mr. Moore devotes a chapter to a vivid discussion of this subject. We know that saw dust and linseed oil will ignite in a few hours. The rapid drying or oxidization of linseed oil is valuable in paints—a process safe enough in the open but a source of danger when confined. Then there are substances that are unsettled and dissatisfied with their state of being like the Ulster question for instance. These substances will fly off the handle at a minute's notice, or without any notice, a good deal the same way as when you rub an Irishman the wrong way. The properties of gasoline and kindred articles are too well known to need discussion. We know the danger of explosion of flour dust when properly mixed with air. Some years ago an explosion of dust in an oatmeal factory blew the roof of the building 125 feet. Such an explosion will wreck any sprinkler equipment and the resulting fire produces the most intense heat. We frequently meet up with statements like this, "Why, this substance is not dangerous; I can put a match to it and it won't burn. The danger of a substance can not be so determined. You might say this of sodium nitrate, that you can put a match to it and it won't burn, but this substance is hygroscopic — the danger lies in its ability to absorb moisture which may cause a chemical reaction and produce enough heat to ignite the bags containing it. It would be interesting to know what substances are stored and how handled in the warehouses along our waterfront, where a serious fire would threaten this city with a conflagration especially as we have no fire boat? Beware of the rubbish pile; it is like boarding house hash—you never know what is in it. Sweepings may be especially dangerous. Oily rage should never be left out over night. Phosphorous should be kept under water. On the other hand, potassium in a bottle of water would decompose the water, giving off enough water to ignite the hydrogen produced if confined. "Fuming acid of nitre and oil of turpentine will ignite instantly." Don't try it. Bromine will boil at 60 degrees. Flourine, cclorine, brimine and iodine are unstable and unite readily with other substances. They won't stand without hitching. With nitrogen, they form explosive compounds.

Japanning and lacquering processes produce a gas which is dangerous. The drying rooms in wood workers need to be ventilated because a gas is given off in the drying process. In arranging ventilators, it should always be remembered that the vapor from gasoline is heavier than oil. A few years ago, a fire occurred in a sash and door

(Continued on page 11)