

## GENERATOR FIRES\*

ONE of the side issues brought into existence by the sustained overloads carried during the war service, is the question of fires, their origin and the best means of handling them, and in view of this, a questionnaire was circulated by the sub-committee of the N.E.L.A., early this year, giving the following results:—

Some 30 companies reported 81 fires in the past five years; 21 fires equally divided between 60 and 25 cycle units, were specifically described occurring in units ranging from 3,300 to 35,000 kw., and from 2,300 to 13,200 volts.

About an equal number of fires appeared to have started within the insulation and external to the insulation. The greater proportion of fires external to the insulation seems to have occurred on 3-phase systems operating without a grounded neutral. Other causes are many, principally short circuits and grounds, with the remainder from mechanical causes, eddy currents, moisture, etc.

The consensus of opinion is that more frequent inspection and cleaning of the generators is very desirable and has a direct bearing on the liability to fires from sources external to the windings. Too many companies appear to trust the air washing devices for this work, but even with the best possible apparatus, air and grease creep in, fluff and dirt accumulate and conditions for potential fires exist. Good practice, therefore, would indicate periodical cleaning.

## Grounding of the Neutral

The grounding of the neutral of 3-phase systems solidly or through resistance, is rapidly becoming standard practice on both 25 and 60 cycle throughout the country.

Twenty-one of the 30 companies replying favor this method of operation; five operating with solid ground system prefer to operate through resistance; three companies oppose the grounding of the neutral. The consensus of opinion seems to be that grounding is very desirable and, in addition to other advantages, has a considerable effect in the reduction of generator fires occurring external to the insulation of the conductors.

It is also rapidly becoming standard practice, particularly on large units, for the manufacturer to bring out both ends of each phase winding to the generator terminal board so as to permit the installation of current transformers between the terminals of phase windings and the neutral of the coils. The current transformers can be connected differentially with respect to the instrument current transformers in the leads between main oil switch and generator, so that in the event of a fault in the generator or its leads, the balanced relay will immediately open the main oil switch, the neutral switch if closed, and, after slight delay, the field switch.

Twenty-four of the 30 companies reporting approve the installation of balanced relay protection and have adopted it as standard practice on all new generator installations and on older generators where the expense involved is not too great.

## Fires in Turbo-Generators

The modern type of turbo-generator is usually completely enclosed and the blower action of the ventilation is such that fires are apt to become serious and very difficult to extinguish. As in the case of most fires the time element is the main factor in control. It is especially important to apply the extinguishing medium as promptly as possible, and as close to the seat of trouble as can be done without permanent injury.

This leads to the question of ways and means of fire fighting. Water, steam and carbon-tetrachloride are looked upon with favor, the standard ways of applying being to pipe these mediums up to the end bells.

\* Excerpt from annual report of the Canadian Electrical Association's Committee on Electrical Apparatus. Members of the committee: J. F. Neild (chairman), W. H. McIntyre, C. J. Porter, M. D. Schwegler and J. S. H. Wurtle.

## PRIVATE WELLS AND PRIVY VAULTS\*

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IT is a far cry from the privy council to the privy vault, and still they are both Anglo-Saxon institutions dating from time immemorial, and both, as institutions, are very much alive and kicking in the 20th century. It would appear, however, that in England, the home of the privy council, that the privy vault was, comparatively speaking, very much eliminated or reduced to a state of innocuous desuetude by good sanitary methods. By the time we reach England's death rate from typhoid fever we can very well say the same of ourselves, but not until then. Why we should speak of the private well and privy vault, strikes me as rather strange so far as the adjective is concerned. If there was really such a thing as a private well, or a private vault, or a privy well, or a privy vault, in the literal sense, I should not be reading this paper to-day. In fact, we find that the well and the vault are often so close together that there is a certain ineffable unity which produces a result to the community which is, so to speak, ineluctable.

## Disease Not Private Matter

The fact is that disease is not a private matter. Health is not a private matter. It is something that concerns the whole life of the community, and the neglect of which becomes a community liability, if not a scourge. One of the most serious preventable diseases we have to deal with is typhoid fever. It is a purely preventable disease, as the experience of our army on the Mexican border and in the cantonments, has shown beyond a doubt. Nevertheless, in 1916, in the 29 cities of over 200,000 population, Indianapolis was the worst sinner, in the number of reported cases per 100,000 population. Our rate in 1916 was 26.6, the highest on the list. In 1915 the rate was not so high, 12.3, and three cities, Columbus, New Orleans and Baltimore, were slightly higher, but in the five-year period, 1911-15, Indianapolis had an average rate of 20.5. Only two cities were worse, New Orleans with 20.9 and Baltimore with 23.7.

## City Government Survey Report

The survey report of the city government, prepared in 1917 for the Chamber of Commerce, by the Bureau of Municipal Research of New York, has this to say on the subject: "The main causes of this condition are undoubtedly the pollution of the stream by sewage and the large number of yard privies. It is understood that a sanitary commission has been appointed to deal with the former nuisance. Two other sources of danger, namely, water and milk infection, are being eliminated by chlorination and filtration of city water and pasteurization of milk. The health department has not the power to compel householders to make sewer connections, even if sewers exist, or to prescribe a sanitary privy.

"It can, however, keep its information as to cesspools and unsanitary privies in a readily comprehensible form by carding this information and filing the cards by streets. It can also constantly agitate the question and insist that an ordinance be enacted making house connections with existing sewers compulsory upon orders from the board of health and requiring that in any future extension of sewers through built-up sections the sewer connections be made by the city and the cost be assessed upon the property owner and paid for by instalments, as other assessments are paid."

## Typhoid Statistics

In 1917 there were 161 typhoid cases reported and 28 deaths; in 1918 there were 86 cases reported and 19 deaths. These statistics are not as accurate as they might be, even as to deaths for occasionally the case might develop into terminal pneumonia and death might be ascribed to this cause. It is fairly safe to say that there are ten times as

\* Excerpts from a paper read before the American Water Works Association.