

**THE BRITISH FIREMAN'S MASK AND SMOKE JACKET.**

BY W. G. FITZGERALD.

The Metropolitan Fire Brigade of London now have among their outfit, not only at the Southwark headquarters on the south side of the Thames, but also at all the leading sub-stations, a number of ingeniously contrived apparatus which are something more than mere masks enabling the firemen to enter smoky buildings, being regular jackets and masks combined, and the wearer being supplied with fresh air by means of pumps, precisely as though he were a diver entering the depths of the sea.

The utility of this apparatus was very fully demonstrated a few weeks back, when a great and destructive fire broke out at a large chemical works on the eastern outskirts of London, the smoke from the burning material being dense, deadly, and poisonous in the extreme.

These apparatus, or at any rate, the more elaborate of them, are made by regular diving engineers.

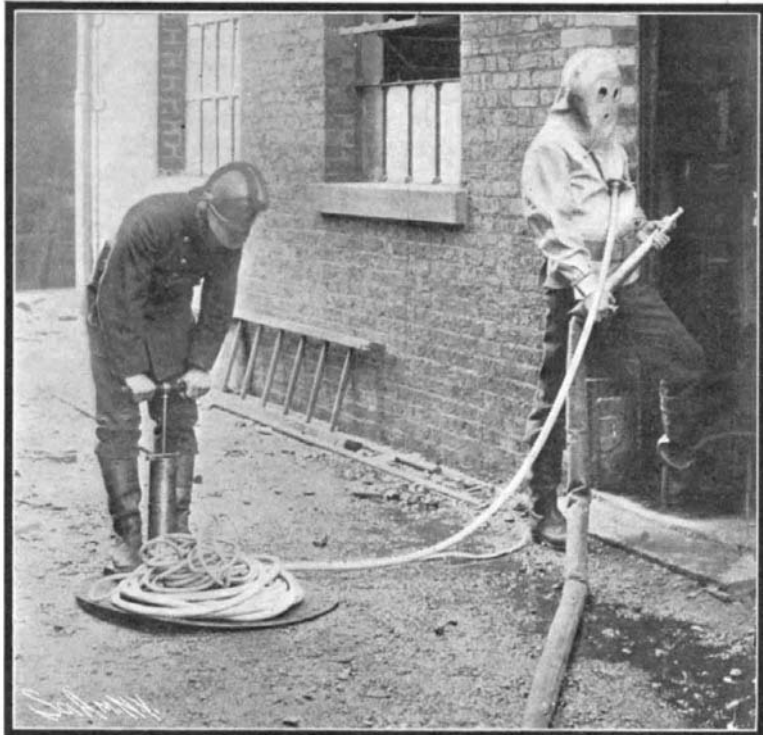
Foremost among these apparatus comes the Fleuss dress, which is more especially designed to enable miners and mine officials to enter pits and shafts after a disastrous explosion of coal dust or fire damp, when it would mean certain death for any one to attempt to respire the poisoned air. It is not too much to say that hundreds of lives have been saved by means of the Fleuss apparatus.

Then, too, in most of the big refrigerating works in England, these jackets and masks are kept handy, much as fire-extinguishing apparatus are kept, so that in the event of any accident happening in the ammonia chambers, the rescuers may venture in with perfect safety to themselves, and effect the work of rescue.

The London firemen are thoroughly well versed in the use of these jackets and masks, and in considerable fires where their use is necessary, they are taken on the engine in sets of two or four together with the necessary air pumps, which supply pure air to the communicating pipes.

Of course the fireman so accoutered has to be very careful in making his way not to get his air pipes entangled. There are other apparatus of somewhat similar kind, however, which do not need to be supplied by outside air pumps, but have a system whereby the respired air is purified and the necessary elements added to it, so that it can be breathed over again.

Another class of London public servants who under-



A FIREMAN CLAD IN A PROTECTIVE SUIT, TO WHICH AIR IS SUPPLIED.

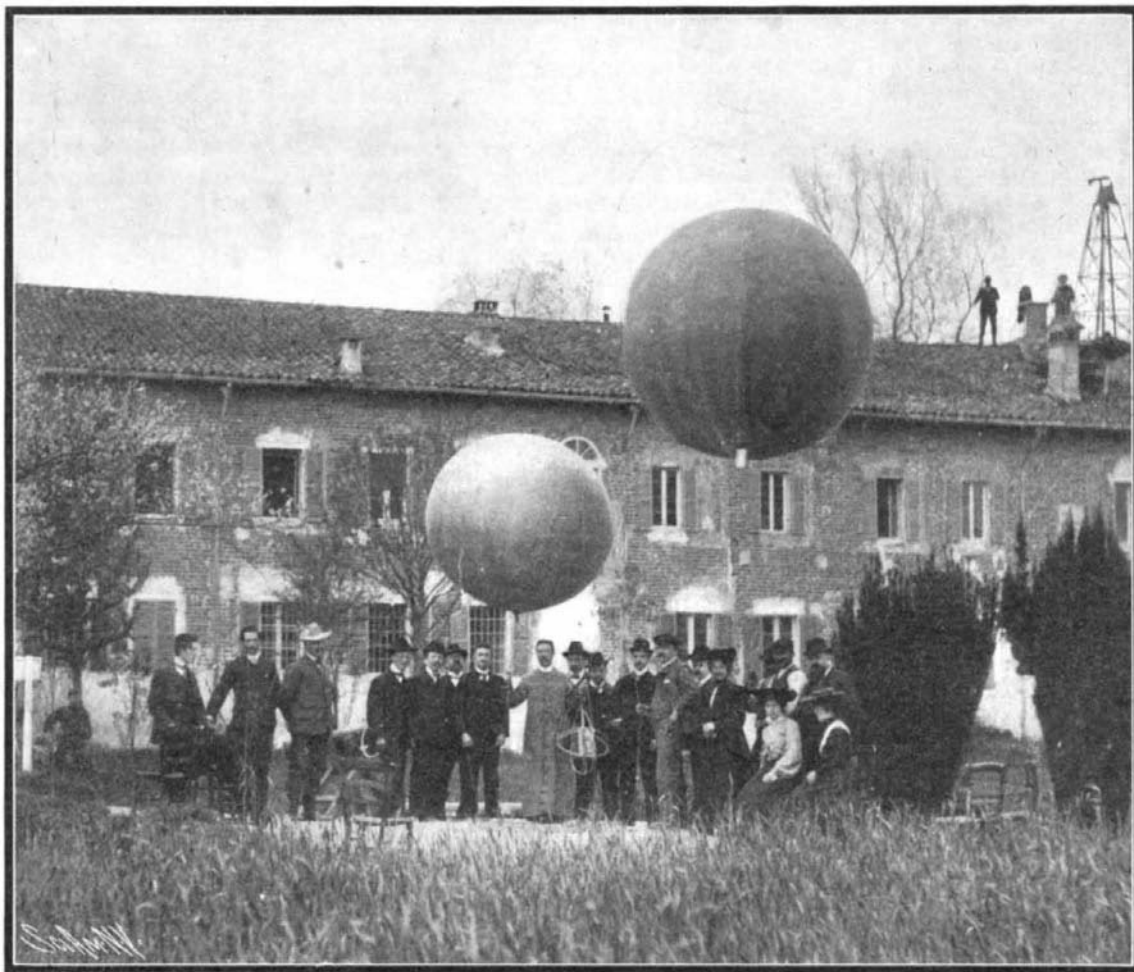
stand the use of this invaluable apparatus are the men who work in the great sewers of London. It happens by no means infrequently that a party of three or four

men taking their way through the main sewers, jack-booted and up past their knees in water, suddenly encounter an accumulation of mephitic gas.

Probably one or two of them may contrive to escape, leaving their companion or companions unconscious in the water or in the flat-bottomed boat which is sometimes used in the great sewers of London. Forthwith a rescue party is organized, and the Fleuss apparatus or another of the same kind is brought into requisition, with the result that the men overcome are without difficulty brought safely to the bottom of the manhole, and then raised without difficulty to the street surface.

These curious "diving dresses," as they may be called, since they enable the wearer to breathe in an otherwise impossible element, are often carried on board British warships, so that in the event of explosion, or similar accident, rescues can be effected before men unconscious or wounded can be wholly suffocated by smoke or gas.

The masks and jackets may also be found in such establishments as the great government powder mills at Waltham Abbey, particularly in the department where the secret explosive cordite is manufactured out of gun-cotton. Many a rescue has been effected by the aid of this apparatus after a serious explosion in the incorporating mills, or the semi-subterranean cavernous structures in which the various nitro-compounds are handled.

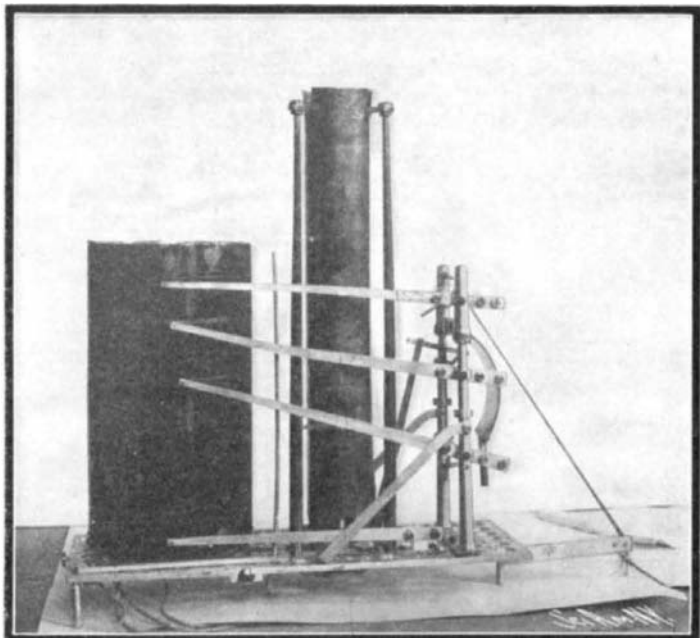


The Balloons Before the Ascension.

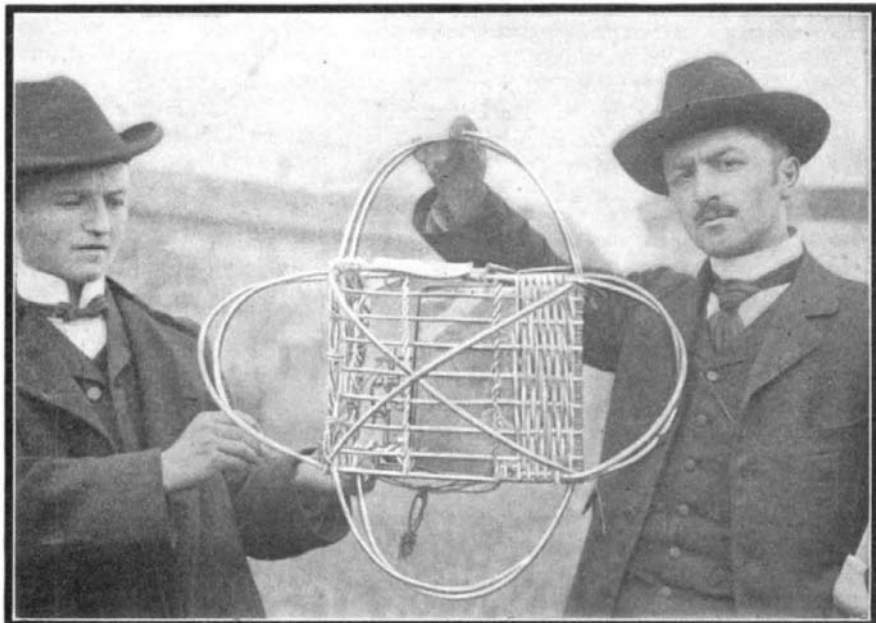
**REGISTRATION BALLOONS IN ITALY.**

Europe has recently taken the initiative in the use of balloons for fathoming the mystery of certain phenomena of the physics of the globe. An international commission with headquarters at Strasburg has been formed under the presidency of Prof. H. Hergasell.

It is proposed to send up registration balloons to different altitudes during each month with a view to establishing the laws relative to the variation, with the height of the pressure, humidity, and temperature. The idea is, generally speaking, to collect once a month data that shall permit of constructing, so to speak, a map with horizontal curves of the thermic, barometric, and hygrometric states of the atmospheric ocean on a given day by figuring alongside of the isobars at the sea (isotherms, etc.), the isobars at 5,000 meters (16,405 feet), and, if possible, at 1,000 meters (3,281 feet), etc., by making use of the data afforded by the balloons and of those furnished by mountain observatories.



Psychrometric, Thermometric, and Barometric Apparatus



Registering Apparatus

**REGISTRATION BALLOONS IN ITALY.**