Analyses of Samples of Gases from Pisa (Italy), Bath in Somerset, Heathfield in Sussex.

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For the analyses of the common constituents a modified Burrell gas analysis apparatus was constructed. This apparatus consisted essentially of a burette, a compensation tube, and four pipettes connected together as shown in Fig. 18.

The compensation tube and capillary had the same volume as the burette and capillary "Leader" and taps, and was connected with it through the potash pipette. Before every burette reading the potash pipette was opened to the burette and the solution in it adjusted to the index marks on the capillary of the pipette, and on the capillary side tube by raising or lowering the potash reservoir and the mercury reservoir of the burette. This adjustment automatically compensated for all changes of temperature and pressure occurring during the analyses.

Carbon dioxide was determined by measuring the absorption in the potassium hydroxide solution, oxygen by absorption in the alkaline pyrogallol solution, and unsaturated hydrocarbons, such as acetylene, ethylene and benzene, by absorption in fuming sulphuric acid. Paraffin hydrocarbons were estimated from the data obtained by measuring the contraction caused by combustion and the volume of carbon dioxide formed.

Pisa Gas.

Methane was the chief constituent, occurring to the extent of 80 per cent.

Analysis gave—

		Per cent.
Carbon dioxide.	CO_2	3·5
Methane	CH_4	80·0
Ethane.	C_2H_6	4·0
Oxygen.	O_2	·6
Nitrogen.	N_2	11·9

An analysis by Gigli in 1912 gave (Chem. Zeit. 1912-36-511)—

	Per cent.
Carbon dioxide	3·8
Methane	80·7
Ethane	6·0
Carbon monoxide, Oxygen, Heavier hydrocarbons.	Traces

Bath Gas.

The gas consisted almost entirely of nitrogen. Its origin is probably dissolved air in the waters, which percolating through the ground finally issue as the hot springs. The oxygen of the air would be used up during the underground passage, leaving the nitrogen and argon to bubble out with the water.

An analysis by Sir William Ramsay in 1912 is given for comparison (Chem. News, Vol. 105, p. 134, 1912). The carbon dioxide in the present