

**THE AMERICAN PRACTICE
OF GAS PIPING AND GAS
LIGHTING IN BUILDINGS**

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The American Practice of Gas Piping and Gas Lighting in Buildings by Wm. Paul Gerhard

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BY
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PREFACE

IN preparing this book my object was not to treat of the various processes of manufacture and distribution of illuminating gas, nor to discuss the lighting of public streets, alleys, parks and squares.

It should be distinctly understood by the reader that I take up the subject of gas installation and gas utilization practically at the point where it reaches the consumers' premises. I endeavor to explain how gas-fitting should be done so that gas may be advantageously employed in the illumination of the interior of buildings. Incidentally, other uses of gas are mentioned and their advantages pointed out.

To give a detailed technical instruction regarding the practical work and the mechanical details of the gas-fitter's work in the piping of buildings was beyond the scope of the book. Several smaller handbooks, mentioned in the bibliography, are available, which cover the ground fairly. In compiling the bibliography (Chap. XXVII) the author arranged the literature, as far as dates were available, by the year of publication.

The book is intended chiefly for the use and enlightenment of the gas consumer and the householder. However, it will also be found useful by architects, engineers, builders, and building superintendents to enable them to acquire a better knowledge as to how to introduce, distribute, and utilize gas in buildings. It should also be of value and interest to gas companies and superintendents of gas distribution service.

The author is under many obligations to Mr. Otis Allen Kenyon, M.E., for valuable suggestions, as well as for his critical revision of the manuscript. He also desires to acknowledge assistance received from Norman P. Gerhard in preparing the bibliography, from Hans W. Gerhard in making the alphabetical index, and from Mr. R. N. Hart in careful proofreading.

THE AUTHOR.

NEW YORK CITY, *January*, 1908.

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THE AMERICAN PRACTICE OF GAS PIPING AND GAS LIGHTING IN BUILDINGS

CHAPTER I.

PREJUDICES AGAINST THE USE OF GAS.

IN the following pages the term "gas" is used to designate an aeriform mixture, used either as an illuminant or as a fuel. When used for lighting, gas is called *illuminating* or *lighting gas*, and when used for heating, cooking, or power purposes it is called *fuel gas*. Gas used for illumination is largely hydrogen enriched by carbon.

We also distinguish between *natural* or *rock gas* and *artificial* or *manufactured gas*, the former being found in nature beneath the earth's surface and brought up by means of bored wells, the latter being gas manufactured in industrial establishments or gas works, or in special private gas plants or apparatus. The bulk of manufactured illuminating gas is either *coal gas*, the product of the distillation of bituminous coal in closed retorts, to which a high degree of heat is applied, or else it is *water gas*, made more cheaply than coal gas by passing steam over glowing coals, and afterwards enriching it with vapors of oil or naphtha to make it luminous. Very little *oil gas* is made from hydrocarbon oils. Water gas has considerably less heating power than coal gas, but in all other respects both kinds of gas, supplied from a central station through a system of distributing pipes, and brought by service pipes into the houses of the consumers, are well adapted for light, heat and power.

Air gas is a special gas, used to a limited extent in the lighting of country houses, and made by forcing common air to pass over gasoline or other fluid hydrocarbons, the air becoming saturated with the vapors of the fluid. *Acetylene gas* is another special gas discovered more recently, and obtained by the contact of calcium carbide with water.

Sometimes the term "gas" is used to designate a gas lamp, a gas jet or a gas burner, or the light produced by burning gas.

A rather unusual, but witty, definition of "gas" is the following, which I quote from the "*Silly Cyclopædia*": "gas — a substance we make light of until the bill comes in."

The industry of manufacturing illuminating and fuel gas celebrated the anniversary of its first century in 1892, for it was in 1792 that Thomas Murdock, in England, first illuminated his house with gas.

Although the advent of the electric incandescent lamp, in 1880, threatened at first to revolutionize completely the methods of both interior and street illumination, the gas-lighting industry has continued to flourish and to show during the past 25 years an ever-increasing consumption of gas for lighting, heating and power purposes. The growth has been particularly noticeable in the so-called "day consumption" of gas, it being at present used to a large extent in gas heating and gas cooking appliances, and also for power purposes, in gas motors and engines.

Notwithstanding the numerous improvements, introduced in gas appliances and in gas illuminants, there are still found, in certain quarters, ill-conceived and old-fashioned prejudices in opposition to the use of gas, and it is with a view of doing away with these, and of clearing up misconceptions and exaggerated or erroneous statements that this brief chapter is introduced. The many popular fallacies regarding gas and its uses will be taken up and discussed in Chapter II.

We have become so accustomed to the benefits derived from the introduction and use of gas in our dwellings, and from the not less important advantages due to the lighting of our streets, squares, and parks with gas or electricity, that we can scarcely believe it possible that a newspaper should have appeared in Germany in the year 1819, in which the following, to say the least, ludicrous, objections against street lighting were brought forth.

The writer of the article denounced the artificial illumination of streets after sunset because "God had decreed that darkness should follow light, and mortals had no right to turn night into day." He declared that people did not require any light at night outside of their houses, and argued that the lighting of street lamps imposed an unnecessary tax upon the people. He also claimed that the fumes of oil lamps or of gas poison the air (!)