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# One Hundred Years of Engineering in Victoria.

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## Foreword.

BY H. R. HARPER, M.I.E.AUST.

*Past President of The Institution of Engineers, Australia, and Chairman, Melbourne Division of The Institution.*

It is of interest to reflect that, coincident with the rise of Victoria, during this 100 year period, from a condition of primeval simplicity to that of a highly civilized state, the engineering story of which is unfolded in the following pages, the world has witnessed the evolution of the professional engineer. For it is no more than 106 years ago that a charter of incorporation was granted to certain persons in England who had formed themselves into a Society "for promoting the acquisition of that species of knowledge which constitutes the profession of a Civil Engineer," the only form of engineering then practised, other than military.

"The Institution of Civil Engineers" was the forerunner of other professional bodies, such as the "Mechanicals" and the "Electricals," designed to meet the specialist requirements of highly developed engineering work. The birth of these learned Institutions was primarily due to the desire of engineers, engaged in similar fields of activity, for opportunities to meet in friendly intercourse. Thus, in 1771, as pointed out in that interesting review "The Professions" (Carr—Saunders, and Wilson) someone proposed to Smeaton that it would be well if some sort of occasional meeting in a friendly way was to be held . . . . . "that thus the sharp edges of their minds might be rubbed off, as it were, by a closer communication of ideas, no ways naturally hostile: might promote the true end of public business for which they should happen to meet in the course of their employment."

Between 35 and 40 years ago, the Civils, followed by the other Institutions, prescribed, for the first time, edu-

cational qualifications as essential for admission to membership, and, by so doing, have gradually improved the status of the Professional Engineer to the extent that membership of these Institutions is accepted as the high water mark of an engineer's fitness to practise his profession in any part of the Empire.

In a parallel manner our own Institution has been steadily working towards the same objective in Australia, and the present level of requisite knowledge and attainment for admission to The Institution of Engineers, Australia, is as high as that considered to be essential by the older Institutions.

I venture the opinion that the authorities controlling the various public utilities and industrial concerns in Australia are prepared to recognize membership of our Institution as the criterion of technical fitness to undertake responsible engineering work, and judging by the standard of conduct to which our members subscribe, membership of our Institution may also be considered a guarantee of ethical fitness.

Great as has been the influence of the learned Institutions upon the service rendered by the engineer in the past, still greater will that influence be in the wider opportunities for service which, to-day, constitute both the privilege and the obligation of the engineer.

Can we, Australian engineers, so direct our thoughts and energies that our Institution may become an instrument of even greater prestige, honour, and usefulness in the community to which we belong?

Melbourne,  
October, 1934.

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Associate Editor

L. R. EAST, M.C.E., A.M.I.E.AUST.

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Key Map of Victoria.

## Introduction.

“There be three things that make a country great and prosperous. A fertile soil, busy workshops, and easy conveyance for men and commodities from one place to another.” —Francis Bacon.

The Hundred Years that has seen the settlement and extraordinarily rapid development of what is now the State of Victoria has been a century of glorious achievement in the art of engineering—the art of “directing the great sources of power in Nature for the use and convenience of man.”

In this period, the achievements of the scientist and the engineer have not only surpassed the wildest dreams of their predecessors, but have changed the whole face of the civilized world. Fertile fields have been made more fertile, busy workshops have grown to vast industrial cities, and, all the time, conveyance for men and commodities has been almost miraculously increased in speed and reliability and reduced in cost.

This century has seen the coming to power of the railroad and the steamship; it has seen the dawn of the age of electricity, the birth of the internal combustion engine and the motor car, the aeroplane and the submarine;

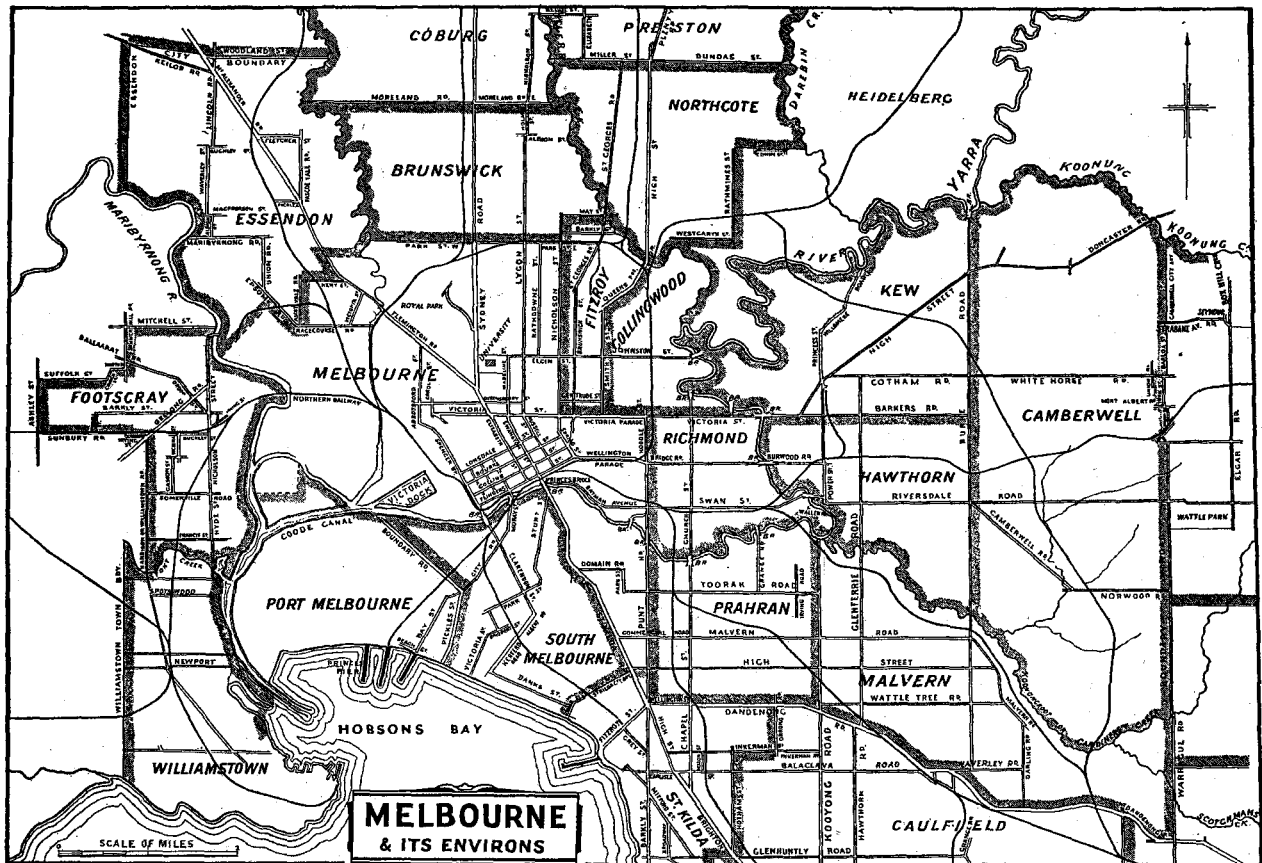
it has seen the invention of the telegraph and telephone, of wireless communications and television.

And in the amenities of life, this period has brought much for man’s health and comfort, for his pleasure and recreation. Household water supply and sewerage, electric lighting and heating, the cinema and the broadcast receiver have long since lost their novelty.

New materials of construction—steels and concretes—ever stronger and more reliable—have given ever increasing scope to bridge builder and structural engineer.

And this is the age in which Victoria has grown to full estate. In the articles that follow, this story of engineering romance is told again as the story of actual achievement in the various fields of engineering in Victoria.

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Key Map of Melbourne.