



Challenges & Changes

TUNNELLING ACTIVITIES IN JAPAN 1996

JAPAN TUNNELLING ASSOCIATION

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PREFACE



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President
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As the new president of the Japan Tunnelling Association, it is my great pleasure to greet you on this occasion of the publication of the 1996 edition of this booklet. The development of tunnels and underground space is not only indispensable to the enhancement of the quality of life and efficiency of economic activity, but from the long-term view, it is also an extremely effective means of preserving the global environment. The urbanization of areas of population concentration and their tendency to expand have already reached a stage in which they can not be controlled. Accompanying this, the greatest part of urban energy production depends on the heat of combustion of hydrocarbons, and the increase in carbon dioxide gas generation is being compounded by the decreasing capacity for photosynthesis of the earth's vegetation. Within the scope of present day technology, no remedy is available other than the development of tunnels and underground space.

In Japan, the Great Hanshin Earthquake, which occurred in January 1995, brought about a great loss of human life as well as great damage to surface structures. However, the fact that damage to underground structures was, on the contrary, comparatively minor can be likened to a ray of light in the dark. It can be said that this fact is instructive regarding the most appropriate form of infrastructural development for a country which is prone to earthquakes.

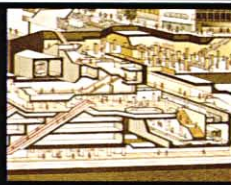
What I have said above is my definite answer to the question of what we should leave as our legacy to the 21st Century. However, we must further deepen our technology for the development of tunnels and underground space. I shall be pleased if the articles contained in this booklet are in any way suggestive in this direction.

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View down into the interior of Super KAMIOKANDE, under construction for the Institute for Cosmic Ray Research of the University of Tokyo

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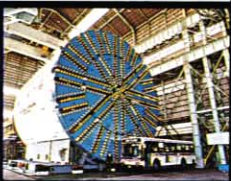
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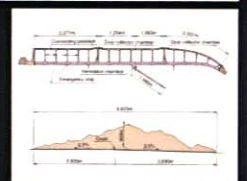
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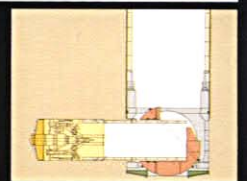
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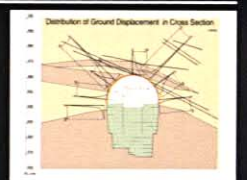
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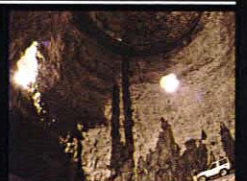
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