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B.Sc.(Hons), M.Sc., Ph.D., C.Eng, M.I.M.M., M.A.I.M.E., has thirteen years experience of mining and is presently working as a Senior Lecturer in the Mining Engineering Department of the North Staffordshire Polytechnic. He is responsible for lecturing senior undergraduate degree courses and specializes in Underground Coal Mining. His research interests are in mine planning, mineral processing and environmental impact of mining. He currently supervises five research projects and is the author of twelve papers in mine water.

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Civil Engineer with Computer Techniques in Hydrogeology as a speciality. At present with a Swedish company: Uppasala Geosystem Co where he is involved in a number of research projects, e.g. the present project on water balance in a sulfide mine tailing and projects concerning acid and acidified groundwater to create a basis for municipal and government action. Before the present position he was responsible for the computer techniques at Geological Survey of Sweden, Department of Hydrogeology.



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(38) Associate Professor of Mining Engineering in Mining Faculty, Technical University of Istanbul, Turkey. Author or co-author of over fifty-five published papers about strata control, stowing and design of support systems and seven books (Design of Supports in Mines, John Wiley, New York, 1983). He is a member of the International Society for Rock Mechanics, and the International Bureau of Strata Mechanics and a fellow of the Chamber of Turkish Mining Engineers.



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Dr. Mining Engineer. Actually Director of Cardona Potash Mine. He worked before during twelve years in underground and openpit polymetallic sulfur mines, and in ground water management.



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Born in 1944. Graduated as Chemical Engineer in 1968. 1971 Ph. D. Thesis on extraction of uranium from Greenland ore by sulphating roasting. From 1972 employed by the Geological Survey of Greenland (GGU) as a Geochemist. During 1973 established and Environmental Laboratory of GGU. Has conducted studies of pollution from mining activities in Greenland.



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For over twenty years has taught undergraduate and graduate courses in Geotechnical Engineering. Currently director of Institute for Civil Engineering, a joint institute of graduate studies and research of Carleton University and University of Ottawa, in Canada. Also President of his own consulting firm and has worked in several countries. Author of over eighty papers and contributed also chapters in books. Actively involved in a co-operation research program in Geotechnical Engineering with the University of Paraiba in Brasil.



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Born in 1940. Graduated at Technical College as a Mine Technician and at Dept. of Water Research Engineering of Budapest Technical University. 1958-63, Miner in coal mines under water hazard. Since 1963, Research Officer of Mine Water and Environmental Control Dept. of Central Institute for Mining Development. Designing mine water technologies and especially water treatment facilities (settlers, machines, tools). Participant in several international projects: Yugoslavia (Ketredéz, Hrastnik Mines) 1980-85 and China (Fangezhuang and Lujiatuo Mines) 1985.

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Obtained diploma of Mining Engineering in 1956 at Mining Faculty of Technical University for Heavy Industry, in Sopron. For some twenty years worked as Chief Engineer in different mines of Borsod Coal Mining Company. Has published several articles about his experiences in mining brown coal from Miocene aquifer sands. Took doctor's degree from this theme in 1983, in Miskolc. Has published several papers on localization of mine-fire, mechanized longwalls and drift driving. Currently Vice General Technical Director of Borsod Coal Mining Company and Vice President of the Hungarian Mining and Metallurgical Society.



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Born in 1959. Mining Engineer. Madrid. Engineer of EPTISA in charge of the mining water problems. Participation in projects about water resources, in particular the studies of the quality of the aquifers of Spain, and the water balance of Jalón Basin.

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B.E.MSc. Ph D. FIE. MAIMM. He obtained his Bachelor of Engineering in 1964, awarded University Medal, and Master of Engineering Science in 1966, from the University of Queensland, Australia. In the period 1968 to 1971 he undertook research into Numerical Modelling for Mechanics of Discontinuous Masses and the Stability of Slopes in jointed rock and was awarded Doctor of Philosophy from James Cook University, Queensland. He is Managing Director of Coffey and Partners Pty. Ltd. and has over twenty years experience with Geotechnical and Groundwater Studies for open cut mines. He is a fellow of the Institution of Engineers (Australia) and a Member of the Australasian Institute of Mining and Metallurgy.



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Born in 1947. Geologist in the University of Barcelona (1947). He has received Ph. D. in Geology from the Autonomous University of Barcelona. Cooperator with the Service of Geology and Investigation of the Sociedad Minera y Metalúrgica de Peñarroya-España from 1971, in several applied investigation program or in problems related with the hydrogeology of Mining Areas.



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Born in 1951 in Guadix (Granada). Graduate in Geology in the University of Granada in 1974. Since 1981 he has been in the Mining Department of Tolosa, S.A.



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Born in 1939. Graduated as Engineer from Organic Chemistry Department of Jilin University in 1963. Specialized in grouting materials, such as chemical and cement grouts. Has taken part in many grouting projects in coal mines. His papers appeared in some of the journals in China. He wrote the part on grouting materials for two books: "Grouting Techniques for Coal Mines" and "Handbook for Shafting and Tunnelling".



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Metallurgist Engineer. General Foreman of Mine Water Treatment Plant. seventeen years of experience. Master of Science. Background in Hydrometallurgy of Copper, Lead, Zinc, Gold, Silver, and Uranium.



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Graduated with Honours degree in Mining Engineering from Nottingham University in 1979 and proceeded to work as Learner Official for Gold Fields of South Africa Ltd. at Kloof Gold Mine. In 1983 completed a Ph. D. at Nottingham in shear strength assessment for surface mine slope design purposes. Since this time has been working within the Mining Engineering Department at Nottingham as a Research Fellow. Most of his work has been involved with geotechnical aspects of surface coal mines in the United Kingdom. Has published a number of papers concerning geotechnical matters in this environment.



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Senior Engineering Geologist. Director and Head of Ground Water Division at Steffen, Robertson & Kirsten (Civil) Inc. BSc (Hons) in Geology. MSc in Engineering Geology, Durham 1970. Specialisation: Ground Water problems in Geotechnical Engineering, Dewatering of Mining and Civil Works, Ground Water Resources, Hydrogeological testing. Author of several publications dealing with ground water in engineering geology, the use of hazard plans and rock slope stability.



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Staff Scientist with Rockwell Hanford Operations at the Basalt Waste Isolation Project, Richland, Washington. Received B.S. degree in Geology from University of Tennessee and M.S. degree in Hydrology from University of Arizona. Registered Professional Geologist in the State of Idaho. During his ten years of professional experience his interests have focused on mine dewatering and depressurization numerical modeling, and disposal of high level waste from nuclear power plants.

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He is Professor of the Dept. of Numerical Analysis and Computer Science, School of Mines, Polytechnical University of Madrid. Spain. He was awarded Doctor degree from the Polytechnical University of Madrid (1985). He has worked in the fields of numerical analysis applied to hydrogeology, numerical reservoir simulation and computer applications.



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ME, PhD, MIE Aust, MASCE. Graduated as Civil Engineer in 1954. Joined the staff of University of New South Wales in 1959 after obtaining experience in hydrologic investigations and engineering construction in Australia and England. Has spent the last twenty-five years teaching Fluid Mechanics and Hydraulics and carrying out research and industrial investigations in the fields of groundwater hydraulics and closed conduit and free surface flows. Groundwater research carried out has been concentrated on laboratory and field investigations of non-Darcy flow, extraction of groundwater and dewatering of open pits. Currently Acting Director of the Water Research Laboratory, University of New South Wales, Sydney, Australia.



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Born in 1958. Graduated at the Lorand Eötvös University as Geophysicist in 1983. Geophysicist M.Sc. Research Officer of the Mine Water and Environmental Control Dept. of the Central Institute for Mining Development, Budapest, Hungary. Main activity fields are geothermal reservoir simulation, in-situ rock stress measurements.



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First Degree: Geology, University of Bristol, UK (1980-83). Currently carrying out research at University of Birmingham, UK, leading to award of Ph.D. Research topic: modelling groundwater inflows to shafts and drifts under construction.



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Born in 1932 in Granada. Dr. Mining Engineer for Madrid School of Mines. Full Professor of Hydrogeology in the Faculty of Geology of Granada University between 1971-1983, and in the School of Mines of Madrid Politechnical University from 1983. Founder Member and General Secretary of the Executive Council of IMWA. Chairman of the Commission of Mining Hydrogeology in the International Association of Hydrogeologists. Invited Professor in several universities. Author of more than 150 paper. Consulting Engineer in mine water problems, with professional expertise on more than thirty countries.



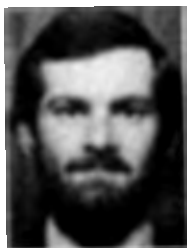
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Born in 1944. Doctor in Geology (Hydrogeochemistry), Professor of Geology in the Department of Geology and Geochemistry of the Autonomous University of Madrid. Specialist in groundwater quality problems and regional hydrology. As member of the Department of Hydrogeology of EPTISA participation in several studies of groundwater quality and groundwater pollution in aquifers. Member of several professional societies and extensives publications on topics dealing with Hydrogeochemistry of Groundwater in the Tajo Basin (Spain).



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She was graduated as a Mining Geologist from the Technical University in Miskolc in 1967. She began work for the Bakony Bauxite mines in the same year. She worked on the water protection problem in the Hydrogeological Department. Between 1972 and 1974 she studied at the Technical University again and graduated as a Hydrogeologist in 1974. She took part in planning and realization of the water protection programme in the Bakony Bauxite mines. At present she deals with the problems of the hydrogeological conditions of surrounding and reducing of pumping to a minimum.



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Research Assistant in the Mining Engineering Department of the University of Nottingham, England. He gained the degree of M.A. in Physics from the University of Cambridge in 1978 and was employed in the development of commercial computer systems and in mathematics teaching before taking up his present position. His research interests are concerned with the numerical modelling of the physical processes associated with groundwater inflow to mine workings. He has published one paper in the International Journal of Mine Water.

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Graduated as Mining Engineer in 1975. From 1975 to 1979 worked as hydrogeologist in regional hydrogeological and geothermic studies of the Canary Islands and the Lower Segura Area. From 1980 to 1982, Chief of Project responsible for the hydrogeological study of the Upper Jucar and Upper Segura areas. Since 1982 to date, Chief of Project of hydrogeology applied to mining.



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Born in 1934. Studied Hydrology at the Faculty of Natural Sciences, Charles University in Prague. Scientific collaborator of the Institute of Geology and Geotechnic, Czechoslovakian Academy of Sciences, Prague. His main activities concern the hydrology of coal and ore deposits during their opening and exploitation. Other activities connected with the use of natural tracers within the deposit region.



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Born in 1949. Mining Engineer in the School of Mines of Madrid in 1975. Three years training in the Geotechnics Division of IGME (1972-1975). Compañía General de Sondeos, from 1975. Head of the Geophysics Department, applied to Hydrogeology, Mining Exploration, Geotechnics, Logging, etc. Eighteen publications in technical magazines. Guest Professor of the International Subsurface Hydrology Course in Barcelona from 1982. Professional Associations: Association of Mining Engineering, E.A.A.G., S.E.G., A.S.E.G., and M.G.L.S.



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Born in 1930 in Sichuan province. In 1951, he was sent to USSR to study in Moscow Mining Institute, where he majored in shaft sinking and tunnelling until 1957. He has come back to China in 1957 and ever since this time has been engaged in mining research work in Changsha Institute of Mining Research.



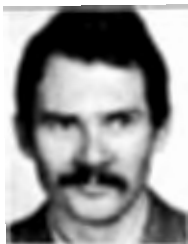
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Born in 1946. M.S. in Geodesy, 1970, from Academy of Mining and Metallurgy, Krakow, Poland. Has practice and experience in mining surveying and mine damages in salt mines. Author and co-author of some inventive projects on this field.



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Born in Portugal in 1931, has been in South Africa since 1953. Started his scientific career doing research in Nuclear Physics and over the last ten years has become increasingly interested in the use of nuclear science and methods of solving problems in the non-nuclear industry. Currently heads Nuclear Technology Division of NUCOR, which is responsible for the application of nuclear technology in industry and for studying the impact of any stage of the nuclear fuel cycle on the environment. Ph.D. in Physics and Master's Degree in Business Administration. Has published a number of papers in scientific and technical journals.



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Associate Research Professor at Institute of Geology, Academia Sinica, graduated from Leningrad Mining Institute in 1958, with speciality of Hydrogeology and Engineering Geology. 1958-1963, studied the origin of mine water and prediction of mine water inflows at Institute of Geology, Chinese Academy of Coal Sciences. 1963-1985, studied dynamic of groundwater, hydrogeochemistry and isotopic hydrogeology applied to water resources evaluation, investigation of seepage in dam regions, seismic and tectonic activities at Institute of Geology, Academia Sinica, and Analysis and Prediction Center, State Seismological Bureau of China.

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Mining engineer, specializing subsequently in hydrogeology. In the practical work she dealt with the Hydrogeology of Lowlands. Wrote master's and Ph.D. thesis in this field and holds scientific qualifications of Ph.D. in Geology. Currently as Assistant Professor at Technical University of Heavy Industry, Faculty of Mining Engineering. In educational, industrial research and scientific activity, deals with problems of Hydrogeology and Mine Water Control, in latter field mainly in coal mining.



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Engineer in water systems section of Chamber of Mines Research Organization of South Africa. Graduated with a B.Sc. in Chemical Engineering from the University of Cape Town. Responsible for assessing the implications of the installation of novel water treatment processes on service water systems underground.



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Head of Department of Groundwater Management at Institute for Water Management in Berlin, GDR 1966-71. Studied Water Engineering at Technical University of Dresden where he obtained his Dr. Ing. degree in 1973 and his Dr. Sc. Techn. degree in 1982. In 1983 went to a Institute for Applied Systems Analysis in Laxemburg, to participate in research of the Project on Regional Water Policies, concentrating in particular on impacts of opencast lignite mining. His current research involves issues in groundwater quantity and quality modeling, development and implementation of models, and case studies for groundwater and integrated groundwater-surface-water management (short-term control and long-term planning).



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Born in 1937. Graduated from Polymer Chemistry Department of Qinghua University in 1964. Since then has engaged in grouting research in Coal Mines. Took part in projects of grouting in shaft-walls in more than twenty shafts, injection of fissured hard rock and injection of sand layers from within the shaft faces. Participated in a grouting project in Huanghai Colliery where injection was conducted at shaft face into a loose and broken stratum intersected by the main and auxiliary shafts. Has published some articles in some chinese magazines and one of them was presented in the First International Mine Water Congress in Budapest.



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Graduated from the Hydrogeological Department of the Beijing Institute of Geology. Has worked for nearly thirty years on research in Hydrogeology in Mines and completed important projects on Hydrogeology in Mines of Karst Areas. Author of over twenty papers, and member of the Karst Commission of the Chinese Geological Association.



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Professor Kipko is Director General of STG Association based in Antratsit, Voroshilovgrad Region, USSR. A 1955 Geological Prospecting graduate of Sverdlovsk Mining University. He received his C. Sc. degree in 1967 and his D. Sc. degree in 1974 in the field of Mining Construction. He has authored more than one hundred and twenty papers and several books covering various aspects of grouting technique. His present professional activities are in the management, organization and scientific guidance in design, research and execution of grouting projects.

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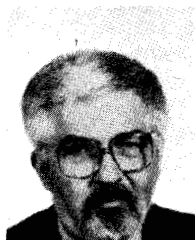
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Master of Science with Hydrogeology in Environmental Research as a speciality. Project leader for the research project that is presented in the current paper. He is also involved in a number of projects concerning acid and acidified groundwater in Sweden to create a basis for municipal and government action.



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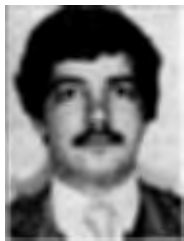


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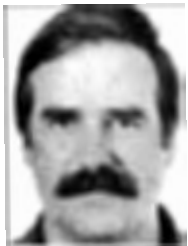
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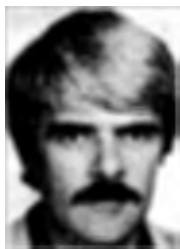
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Born in 1939 in Budapest. Obtained diploma of Mining Geology in 1963, and diploma of Hydrogeology in 1976 at Technical University for Heavy Industry in Miskolc. Since 1963, working at Borsod Coal Mining Company where currently was Head of Section of Mine Water Prevention. Has taken part in planning and operation of water prevention systems of different mines. In this field he has delivered several lectures in Society of Sciences, and published several papers and articles. In IMWA he is the Chief Delegate of his Company which is a Corporate Member of Association.



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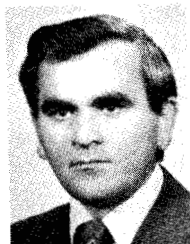
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Born in 1931. Vice supervisor of Grouting Research Laboratory, Senior Engineer from Beijing Research Institute of Mine Construction. Graduated from Mine Construction Department of Beijing Mining Institute in 1956. Took part in the research on vibrating drop-shaft sinking method, by which eight shafts were completed. He accomplished a research project of pregrouting from within a shaft intersected a sand layer. Has taken part in writing of some books, entitled "Coal Mine Grouting Techniques", "Handbook of Shaft Sinking and Tunnelling", and "Safety Regulation for Coal Mines".



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First in the Engineering Department, Hunan University, China, and after in the Changsha Institute of Mining Research (research of materials for chemical grouting), he has developed lignin ammonium and other materials for chemical grouting and presented several papers to various conference such as A Discussion on the Properties of Commonly-used Materials for Chemical Grouting, A Study of Water Glass as a Chemical Grouting Material and A Test Summary of SP-1 Material for Chemical grouting. In addition, he has five technical papers on SP-1 and SG-1 water glass grouting materials published on the Technical Journals for Shaft Construction of the Coal Ministry.



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