

## Presidential address

Discours présidentiel

VICTOR F.B. DE MELLO

For most of us, most of the time, it is heartening that the poet declared, "They also serve who only stand and wait." Then, suddenly, when the moment comes, to stand and serve, there is the humbling weight of infinity to whisk us into nothingness.

Inscrutable designs of destiny have called me to stand before you, formally opening this Golden Jubilee International Conference, charged with historic significance. Arising out of the deep respect for the past, and bursting out towards the grandeur of visions and responsibilities for the future, there is the hiatus, the infinite density of the iota of the present, living, livable, going, gone.

Prodded and awed by the traditions set by illustrious predecessors, I stand entrusted with conveying a message. In this world overstocked with printed communication, I should only presume to rob you of the continually irrecoverable present, if it be exchanged for a living message, a message of constant renewal. Fortunately, many are the messages that were collectively contributed by yourselves to me and through me, as being perennial in our society: My hope is that I may be able to express them as you would like to live them.

### Gratitude and Recognition. Our Host Society, the U. S. Member Society and Her Patrons.

Firstly, on behalf of our truly international brotherhood of geotechnical engineering service to all mankind, I thank our hosts, the U. S. member society and the conference Organizing Committee, for an effort incalculable, that will doubtless be crowned with every success during this week and the post-conference tours.

Gratitude is a living, ever-renewing sentiment. It would be foolish to presume to repay him who gave of himself, to give to the giver: instead, one renews the sentiments and actions by passing the bequest down the line to the next one in need, gratifying the first donor immeasurably by respectful emulation of the example.

As a token of our faith that such gestures of gratitude ennoble and enrich us, it is appropriate to recall that the start of my mandate had been beclouded by the sad and untimely loss of Kevin Nash as Secretary General.

However, the Executive Committee at the Xth International Conference, Stockholm 1981, promptly instituted the Kevin Nash Gold Medal to commemorate his contribution to the society and to foster his ideals.

"The medal should be awarded to a person who, through his distinction as an engineer, his international contributions to engineering practice and education, his contributions to international good will, and his service to the society, has made a major contribution to fostering the ideals and goals of this International Society throughout the world." (A)

I now have the privilege and pleasure to announce that, by the coincidence dictated by the consensus of an inner conscience of brotherly geotechnicians across the world, the first Kevin Nash Gold Medal has been awarded by the committee of past presidents to Professor Harry Bolton Seed. (B)

Harry, would you please come forward to receive this token? Although it is strictly individual, and so merited, would you kindly allow me to use it also as a symbol of our worldwide gratitude to the conference Organizing Committee, and to all our U. S. hosts who, at this Golden Jubilee Conference, repeat the efforts and hospitality with which our fraternity started on its trek at its first oasis, in Harvard 1936?

### First Key-Word, International.

Far too many thoughts press our minds for a chance to occupy some place on such momentous occasions. I choose as the second one the truly international aspect.

If we need some form of grouping to bridge the gap between the infinite of reality and the finite of our individual and social grasp, let it be for our betterment and never to our detriment. At the Harvard 1936 Conference we were recorded as members (geographical entities), 21 present and 13 absentee, totalling 34. Presently we are grouped as 57 member societies, one of them, the Southeast Asian society, representing an exemplary group society of considerable impact and geotechnical productivity.

One should ponder on what might have been the unifying principle spontaneously generated for identifying "members" in 1936. Every

authoritative pronouncement throughout our history has emphasized the need for efficient use of groupings, recognizing geographical, geological and geotechnical differentiations, to improve our cognizance of the pervading technological principles, by enriching experiments and experiences with their exteriorized local peculiarities. So it is out of the wealth of variety that we draw the exhilarating richness of unifying principles. To the bafflement and real marvel of our myriads of individual and collective differences, our answer is to identify them, and to delight in recognizing them. The world's tendency to develop overridingly along compartmentalized vertical columns, geographical, cultural, pseudo-racial, religious, political, etc. demands from societies such as ours a priority dedication to the horizontal cross-linkage that preserves the promising matrix: Within our profession, it is the calling to serve the advancement of civil engineering for all of humanity, in its needs for geotechnical support.

We have grown immensely, but still have big areas to cover. For instance, in comparing with the National committees in the international committee on large dams, we must (C) regrettably list areas that do have large dams, without having geotechnical member societies of ISSMFE. Are we not indispensable to civil works as heavily dependent on geotechnology as dams? Honestly, whose failing is it, if any area of the world still remains unconvinced of possible benefits in having geotechnicians join our company for open exchange of experiences, advances, misbehaviors, and failures?

#### Terzaghi and Early Mentors. Nurturing Their Ever-Renewed Lessons.

Man needs occasions such as this, of pomp and circumstance, of mixed nostalgia and euphoria, to set the milestones that mark his wayfaring. Hundreds of thousands of years of our neurological and cultural evolution are associated with the Bayesianly perfected ability to register, retain and transmit things memorable. Under this century's precipitous pressure to dismiss the place of memory, because of the flood of print and especially modern instantaneous all-embracing communications and computers, we shall be emphasizing the present crucial demand for forgetting as a very prerequisite for sanity and liberated creativity. Nevertheless, we must emphasize that both for memories and for the purgings of forgetting, it is the exercise of selection that will preserve and stimulate us. "Choose your love, and love your choice."

Let me summarize a few dominant examples.

Terzaghi. It has been the privilege of my mandate to have witnessed worldwide commemorations of the centenary of Terzaghi's birth, 1883. His unchallengeable place in the realm of geotechnical engineering was promptly consecrated (1963) by our U. S. colleagues: The Geotechnical Engineering Division of ASCE instituted the yearly Terzaghi lecture, and the Karl Terzaghi Award, essentially biennial, "For outstanding, continuing contribution to the field of geotechnical engineering in the United States..." (D)

Simultaneously the Brazilian member society created as its highest tribute to local geotechnicians the biennial Terzaghi prize award, in recognition either of the greatest cumulative contribution to the date, or of the most outstanding published contribution in the given two-year period. The first awards were given in August 1966, at the close of the 1964-66 mandate of the Society's directors. (E)

Everybody agreed, however, that Terzaghi's special position regarding modern soil mechanics, and particularly in fathering this International Society, merited an outstanding independent tribute by the worldwide community. As professor at the Technische Hochschule in Vienna, Austria, he opened the Harvard 1936 International Conference with the words "The opening of this conference is an event of unusual significance. It represents the first international council in the perpetual war of the civil engineer against the treacherous forces concealed in the earth." By coincidence, in holding this Golden Jubilee Conference in San Francisco, subjected to the treachery of a major fault (San Andreas) we are profiting of the prudence of saintly names that may intercede with God for our guaranteed comfort in the forthcoming days. His presidential guidance of the Society's first twenty-five years imposed on us a debt that we now propose to redeem and perpetuate by the creation of the Terzaghi oration of the international conference of this worldwide family of his. I shall leave for later more specific mention of the Terzaghi oration and first orator chosen, to follow me on this podium shortly.

Honouring Special Predecessors and Mentors. I am sure that one of the most stimulating and rewarding technical sessions of any international conference will be the session entrusted to our past presidents, special lectures or the history and development of geotechnical engineering. We will be shown that in the civil engineer's history of harnessing nature's mysteries and whims, the anonymous "unknown soldier" was ever a most important contributor. However, we need to select some to symbolize the best in us: and we must be frugal in distributing honours lest they degenerate in significance.

From the start of my presidential term, a call was sent to all member societies to submit information and proposals so that at this special occasion of the Golden Jubilee Conference, our recognitions of the meritorious past might be brought to the fore. The following summary expresses the result. If any significant mention is found missing, it is due to my not having received the information on time. I wish to recall that in the few inaugural words allotted to me at the end of the closing session in Stockholm, I redeemed a personal debt by dedicating my term of office to the memory of Donald W. Taylor as my "guru."

1. Firstly one must mention the Rankine lecture as essentially "hors-concours." The successful outcome of the London 1957 ISSMFE Conference furnished the means for sponsoring an "annual lecture by a person of distinction in the field of soil mechanics," in tribute to Rankine who in 1857 had submitted to the Royal

Society a paper "on the stability of loose earth."(F)

2. Within the Terzaghi era, the principal internationally known recognitions are:(G)

- (i) The R. F. Legget Award, 1969 on, annual, Canada.
- (ii) The Nabor Carrillo Lecture, 1972 on, biennial, Mexico.
- (iii) The Laurits Bjerrum Memorial Lecture, 1975 on, biennial, Norway.
- (iv) The J.E.B. Jennings Award, 1978 on, yearly, South Africa.
- (v) The John Jaeger Memorial Medal, 1979 on, quadriennial, Australia.
- (vi) The Arthur Casagrande Lecture, 1983 on, quadriennial, South America. To be delivered at the Pan American Conference from 1987 on.
- (vii) The Casagrande Fellowship Award, 1985, yearly, U. S. Member Soc./ASCE Geotech. Division.

Token Recognitions to Society Officers. Most societies start with the trappings and trimmings of organizations that distribute both functional attributions to the officers and some certificates of recognition at the conclusion of the term of offices. Our Society's historical aim was dominantly concentrated on the congenial technical and social quadriennial family gatherings, such as will be the hearty pursuit of all this venue too. Indeed, one of the great tributes to our Society's parentage lies in the fact that we have grown very much, without losing the spirit of a small family, within which, despite widely varied domestic and cultural customs, the pervading reality has been the unmeasured, anonymous service.

To you wives, who have wondered at this absorbing extracurricular activity of your husbands, and to all children who had fathers dashing off to some conference on bored piles in lieu of taking them to the football game, to my own wife and children, I must submit an apologetic and deeply grateful message in the name of the importunate world-spread family. None of the past officers of our Society, our friendly and kindly senior relatives, could ever visualize any sense in receiving a scroll of recognition for the services rendered in his own time. Their cumulative effort brought us to this magnificent Golden Jubilee. It is the Society that pleads to feel a little more elated by having reminded itself of this minimal overdue gesture, to embrace all past presidents and vice-presidents.

In the name of all, I have the pleasure of approaching our senior past president, Professor Skempton, Dear Skem, to hand him his scroll at this opening ceremony. This will symbolize the distribution to be made forthwith to all others.(H)

Members Present at the First Conference. "The moving hand writes and having writ moves on." I received an enthusiastic letter from Professor Christian Veder (Austria), less than six

months ago, eagerly planning to be with us. He had been present in Harvard 1936, and had attended, with contributions, all subsequent conferences; I last met him, enviously active as always, at the European Conference in Helsinki, June 1983. Unfortunately, a few weeks ago the light was suddenly put out, and we are deeply bereaved.

This is not an occasion for sadness, but the very close coincidence of the case, involving one of the few remaining main pillars of our Society's first gathering, does invoke special feelings. All the greater is, concomitantly, our joy and pride at signalling the presence of the following illustrious members who participated in the first conference: to each of them our hearts pour out with filial respect and affection, with best wishes that they may enjoy both the reminiscences, our present bustle, and enduring prospects of accompanying us along the challenging uncharted road ahead. The names I now have are: Dr. R. F. Legget and Professor J. Osterberg.

Accounting for My Mandate: A Fleeting Message of the Dynamics of Life.

Four years ago a sufficient number among your delegates kindly expressed the trust that I might be of some service to the International Society. You yourselves rendered the initial service to the key-word international by breaking the barrier of the Boston-Paris parallel, the understandable Mason-Dixon line that in our subconscious limbic system or R-complex, separated the northern neocortex from the big underlying body that needed some stimulus of recognition that it had absorbed the signals eagerly sought and gratefully received from the brain centers.

However, I was and am not entirely deaf to the whispers concerning a certain rebel, somewhat unpredictable. Neither had I been unaware of the presumed fact that, south of the Tropic of Cancer, people are branded as allergic to correspondence. Truly speaking, what are "facts"? When do rebels become revolutionaries and later victorious? When do they, through representing the "establishment," progress into dogma and domination, nonetheless finally regressing into decay?

I am sorry if I failed any predictions of unpredictability. While recording my penance for actions and omissions undesired, I dare submit that your friendly mandate and your trust in calculated risk, made me strive, at a difficult but challenging time. Having lived long periods in the colonies of Goa and British India, as well as in the U. S., Europe and South America, and having the incalculable privilege of closely-knit contacts with almost every country, region and culture of the world, I had to shoulder the challenge to stir the giant within our Society, as stated by an enviably great rebel turned victor, Terzaghi, Rotterdam 1948: "Regional developments. Hence the geographic distribution of the principal soil types alone calls for regional development and for interchange of regional experience on an international scale."(I)

Within the Society, as a simple engineering decision, this irrepressible urge required simultaneous activity along: ( I )

- (i) Organizing and strengthening of the head office, and coordinating bodies and policies.
- (ii) Stirring younger geotechnicians from all quarters to feel that they must and can participate effectively, for the good of the entire body.
- (iii) Stimulating increasing activity through the individual member societies and their first-stage international links, the regional vice-presidencies.
- (iv) Guaranteeing increasing technical cross-linkages through technical committees and regional technical subcommittees, the drive and core-work for each to be volunteered by individual member societies, but carefully avoiding dominance. Again quoting Terzaghi, Rotterdam 1948: "Geologic aspects of soil mechanics. ... Exploration of these deposits by means of the same procedure would be utterly wasteful. Each one calls for a different technique . . . . . We need in each one of the principal soil formations . . . . . A great number of complete and reliable case histories . . . . . This fact alone calls for a division of labour in a geographical sense . . ."

I shall not exert your patience by expatiating on these internal initiatives within ISSMFE. One basic aim in accepting a function is to do the best one can; the other one, no less important, is to do everything to make oneself unnecessary. We are well reminded that the cemeteries are full of people who were presumed indispensable: yet humanity moves onward. As usual there is the problem of delicately balancing extremes, in order to optimize results. Within the horizontal space of one's own term, one should minimize one's own action, hoping to catalyze others to act in one's stead. Thereupon, within the vertical dimension of successive presidential terms, in respecting the need for a balance between conservatism and change, one should never go beyond creating the instruments in lieu of the end-products.

Through the rest of my allotted time I shall dedicate my talk to some of the items that strike me as dominant or dormant. During this time by protocol you are expected to listen. Hopefully we shall complete our tasks concurrently.

Third Key-Word, "For Geotechnique." Purpose: Engineering, Through Geotechnique.

What is engineering? Is it a science? Is it rational? Is it an art? Is it logical? In fact, is there such a thing as unqualified "logic," or does it always truly have a prefix, such as analogic, philologic, geologic, psychologic, sociologic, etc.? Did not every period of human history attribute to its "clear" line of thinking the unqualified attribute "logical"? How far is it an innate unperceived assumption of the thinker, that

he is able to abstract himself from his inner and outer self, and is not part of the experimental world he would presume to dissect in perfect, reciprocal uncontamination? Do we need to be reminded of Daedalus (Lit. "The Cunning Worker") whose son Icarus went one step too far, and flying too near the sun, plummeted into the sea because his wax wings melted?

Is an Engineer a Cunning Worker? What is the place and contribution of geotechnical engineering? Is not geomechanical a more restrictive implication than geotechnical? Is geotechnique fundamentally the "rational" application of applied mechanics to materials of somewhat more heterogeneous, complex, untamable and unpredictable behaviours than were associated with the steel and concrete of our structural engineering colleagues of the early days of soil mechanics? Besides, when dispersions harass our computations, is it basically a question of applying mathematically idealized, statistical computations of averages, standard deviations, and confidence limits?

To me, engineering is a purposeful effort of cunning workers who always have a why and a what for. Walking at 1.00 < factor of safety < 1.5 on the tightrope of the presumed best solution for the assumed wisdoms, failings, economic limitations, and soaring desires of the day, they attempt to intervene successfully but temporarily, in the immensely subjugating processes of nature, which herself is presently idealized as being content with exercising her slow but perennial principles of natural selection at P.S. = 1.00.

Engineering uses art and science, "intuition" (innate and subconsciously absorbed), and, of course, the rational analyses of the day: all these are means. But the end is creativity, often inventiveness, ingenious. Engineering is the end-product of design (i.e. intent drawn-up) + construction + operation (a live function to be continually reviewed and revised in order to preserve or enhance the intent). As a community of engineers we must urgently repel the widespread notion of our acting on certainty, and providing static, permanently valid projects.

In repeatedly re-reading the history of discovery and development, I find myself ever more forced to take questioningly the firm theoretical, scientific, beliefs of any given person. I insist on the immense difference between (1) the need to have strong convictions to be able to give and transmit, and (2) the inner certainty that "all the world's at stage, and all the men and women merely players." I must confess that I have begun to doubt of myself, whether my self-diffident ironical interpretation is not too subjective and pessimistic. The fact is that even in carefully re-reading successive general pronouncements by Terzaghi, I only feel a definite strong trend of change. To the diffidence in belief the engineer counters with positive action. To myself, not a single one of our great mentors can be associated with any static theory, however

brilliantly advanced beyond its time, but rather, with the stubborn revitalizing habit of continued retheorization.

Am I becoming old and grouchy when I complain that universities are no longer producing the civil geotechnical engineers, but mostly young technocrats who are absolutely sure of their theories, and armed with computers, absolutely sure of their numbers, to several decimal places?

Creativity is not created in frequency, and is not generally taught. It is difficult to institutionalize an academic structure whereby creative students are instigated to question, challenge, disagree, and propose other solutions, presumably more elegant. Yet, we cannot deny the preeminence of engineering creativity as a physical visualization of a solution that so elegantly and superabundantly sets aside or dominates a set of problems, that calculation and analysis most frequently become quite dispensable. Such thinking seems borrowed from Terzaghi, 1952 "Origin and Functions of Soil Mechanics," ASCE Centennial Volume, "To practice an art successfully, one must possess the capacity ascribed to Theodore Roosevelt, for thinking with the hips ... in other words, one must be able to arrive at correct conclusions without preceding logical reasoning ..." except that I would revise the words "correct" and "logical" as somewhat more relative. Quoting again ... "During the earlier stages I used extensively theoretical procedures some of which I had to invent myself, but during the last decades I solved almost all of my practical problems without elaborate computations." To myself, he is describing the process by which something becomes logical to someone, and although he mentions "last decades," it is evident that he was referring to problems repeatedly faced, and not to chronological age, because the spirit and procedures of youthful challenge and courage at facing new problems, accompanied him to the very last years of his life. Quoting "... the knowledge accumulated in a human brain has no practical value unless its owner has the moral courage to use it as a basis for decisions." Logical, rational, theoretical, are thus developed and transitory, applicable to problems already faced; and engineering is decision.

I have found an object lesson in the international competition held some years ago for a design-construction turn-key solution for the famous leaning tower of Pisa (Figure 1). Best supported international civil engineering companies, aided by elite geotechnical consulting services, participated. Figure 2 (drawn from a paper by Professor Schultze) shows some of the many different physical solutions submitted. When faced with a problem of high ratio of responsibility/feasibility, it is not in better analytical work that engineers seek solutions, but rather in different physical solutions, often by lateral thinking, seeking different statistical universes in order to set aside quite definitely the possible histogram of degrees of undesirable behavior.

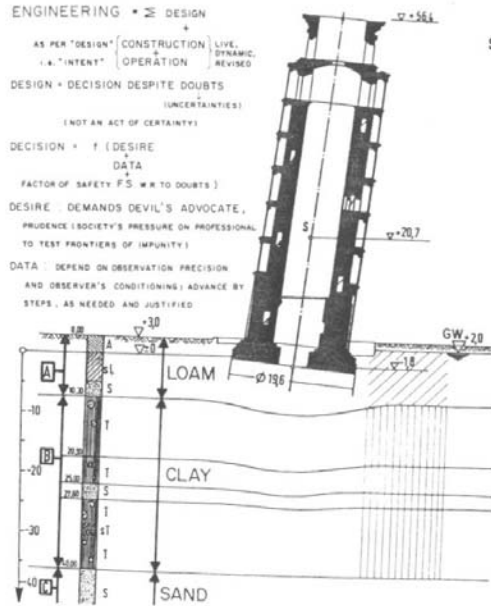


Figure 1.

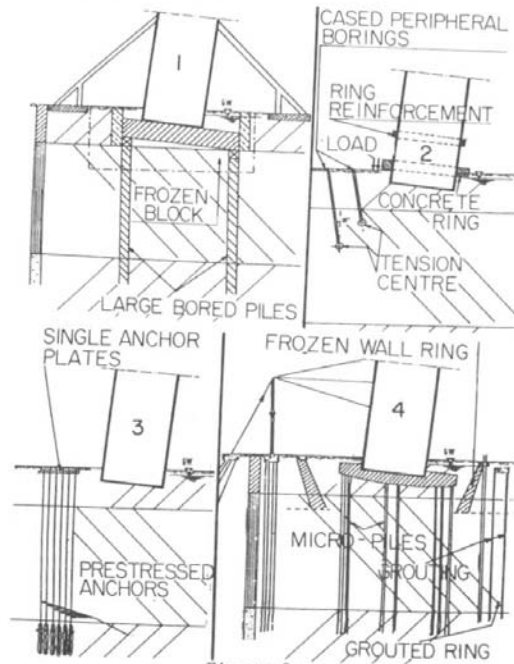


Figure 2.

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Have you not often woken up in the middle of the night with the flash of a brilliant solution to a problem that only becomes fuzzy during the day? If you are somewhat uncertain of being awake, I am with you: in Figure 2, it does become patent that dreams and nightmares intermingle, requiring careful selection.

Next Key-Words. Decisions and Actions. Human Engineering at the Service of ISSMFE, and Through ISSMFE.

The four-year presidential term is too short to achieve anything but the possible imprint of one's priority preoccupations. I shall try to summarize my intents by roughly grouping the technical committees that have served during my term.

Man and His Environment. The Civil Engineering Geotechnician, Facing Time, Nature, (L) and Society. I submit that the most important question facing the geotechnical engineer is for him to reassume a position as the foundation instrument of every civil engineering orchestra, and for the civil engineer himself to reassume his position as the most influential element of human society in affecting environment. Time was when engineers (i.e. cunning workers on decision and action) were subdivided into but two categories, the civil (the constructor) and the military (the destructor). Specializations arose for exponentially increasing the capacities of different instruments of the orchestra, but I do not believe that they challenge the need of the conductor and the composition's score: is it to be symphonic or martial? All engineering efforts, of all engineering professions, separated in the past fifty years, continue to be for only one purpose .. the better civil life of humans and societies.

In recent years in every walk of life as a citizen and professional, I have been increasingly stunned at the proportion of emergency calls regarding failures. I am not particularizing on geotechnical failures: for instance, some of the most devastating to society are of planning and banking, wherein it appears as if eminent citizens are bent on getting something out of nothing, or on clinging to the medieval philosopher's-stone complex of a single, simple method of turning everything into gold. Among ourselves, the worst occurrences reflect an unfortunate lack of comprehension of the scale in which we affect natural conditions, by action or omission. Indeed, under conditions that are average or somewhat worse, most often, by design, we provide favorable solutions. Visualize then, how serious is our responsibility in inducing people to believe that everything will be definitely and permanently well; whereupon, suddenly when a really extreme condition occurs, we helplessly watch catastrophe submerge those who over-trusted us? Is it enough to claim, rightly, the "acts of God" attenuant? Is it not our collective duty, together with law-makers and responsible leaders of society, to correct the century-old deterministic misconception that civil engineering belongs among the "exact sciences"? The most disheartening

fact is that often the great mishaps overtake professionals who presumed they were correctly following correct lessons well learned twenty or thirty years ago. In fact, despite all emphatic admonitions of the past, that every single case must be considered significantly different, until proved otherwise, i.e. until proved acceptably analogous to others, we must sound the alarm that the adoration of computation has resulted in most unfavourable misuses of appropriate and inappropriate theorizations to absolutely inapplicable situations. What is the psychological refuge that induces so many to prefer pets to fellow-humans, and nowadays, among pets, an occasional dedication to the one most mechanically predictable and controllable, the machine, the computer, the robot. Would such psychologies match the zest emphasized by Terzaghi (Rotterdam 1948) "These features keep us alert regardless of the scope of our experience in space and time, and the lure of the unexplored never wears off..?"

Three technical committees and one regional subcommittee stand witness of the starting initiatives within the area of enhancing the development of all-round cultured geotechnicians. (J)

Man needs to stand proud and humble in the knowledge of his historical roots and time, in order to acquire stature as a citizen of the world. The least we could do was to stimulate the effort of the technical committee on preservation of old monuments and cities. I hope that this and similar initiatives grow and perpetuate. Besides the enrichment to ourselves, I envisage such a technical committee as a magnetic link with the big, wide world of culture, tourism and internationalism. I had eagerly visualized the unquestionable interest in sponsoring cultural TV renditions of the three historical lectures of our past presidents, for the sake of the upper echelon of the public whom we serve, somewhat in the manner in which Galbraith's 12 chapters of the "Age of Uncertainty" were memorably televised.

It is impossible to emphasize technical committees more important than the ones on (M) landslides, and stabilization of landslides in Europe, both because of the tremendous impact such natural events have on society, and because of the service such committees render to us internally in forcing a close working relationship with our sister societies, engineering geology IAEG, and rock mechanics ISRM, and with the broad civil engineering aspects of meteorology, hydrology, and professional branches with big public works, highways, etc. Quoting Terzaghi (Rotterdam 1948): - The most important areas of contact between soil mechanics and geology are encountered in connection with problems involving the stability of slopes and the foundation of storage dams. Hence the time may come when it will be appropriate to combine soil mechanics and engineering geology into one unit, under a name such as geotechnology." How revolting to find the great frequency with which geotechnicians routinely conduct circular slide stability analyses without even having investigated



the geology! A society cannot acquire dignity or stature without accepting the heavy burden of internal judgments, for criticism or praise: the necessary proviso is that the judgment be of facts rendered anonymous, and not of people, whom charity recognizes as mere instruments.

An important technical committee relating us to the public is that of allowable deformations of buildings, and damages. I recall Dr. Golder at the Pan American Conference, Puerto Rico 1971, who caustically reminded us "who does the allowing?" and "is it not really 'unallowable settlements' that should be discussed, and at what cost to whoever pays?" Mexico City's developed ability to live with big settlements and special underpinning inventiveness (e.g. by pilotes control) is legendary. Finally, it is indispensable to recognize that damages are caused by excessive differential deformations, of heave or lateral displacement, and not merely of settlements. I am especially gratified that at the Vth International Conference on Expansive Soils, Adelaide, Australia, we concluded in favor of conducting future work of this able, independent group, as an ISSMFE technical committee, side by side with those of other "problem soils." (N)

Two extremely important technical-administrative committees were postulated and pressed, but await implementation. The topics of both of them are felt in very damaging conditions and proportions in the developing countries. Firstly, the committee on policy regarding manuals, standards and codes. Terzaghi (London 1957) should rise from his tomb to shout again his deriding statement "... tables of allowable bearing values which can still be found on exhibit, like paleontological specimens, in the building codes of some cities." Some mummies continue being exported, and I understand recent experiments have succeeded in reviving the DNA life principle from a mummy. Three weeks ago I was urgently called to a huge project that was falling all along because of the misuse of a questionable imported codified recommendation! Of the billions owed, a big percentage is due to such situations, all of them generated by the best of intentions. The road to hell is supposed to be paved with good intentions.

The second one, on professional practice, ethics and responsibilities in the conduct of design and consulting in foreign areas, was intended to emphasize that our image to the public is transmitted much more by what our wandering apostles do, than by what the gospels say. I insist that as an international society, we should discuss and establish recommendations for companies and persons going to apply their expertise in other areas. We must be very cautious not merely regarding the variabilities of soils across geography, but also of laws and practices from country to country. Alongside with the 1000-word basic lexicon pocketbook that a foreigner recognizes as needed, should not we have some minimum suggestions to preserve foreign colleagues from professional pitfalls?

If there has to be a choice, let us not forget that our priority allegiance is to humanity, and not to misplaced solidarities that deteriorate our action and image.

Geotechnicians Intensifying Relationships with Sister Societies, Collateral Societies, (K)(P) User Societies, and Others in General. It is unnecessary to spend more than a second on this obvious point. We are a society because we wish to preserve and foster the simple function attributed to the conference, Harvard 1936, "establishing personal contacts between those who are interested in the subject from a theoretical or a practical point of view, and in stimulating exchange of experience"; having grown, we now perpetuate, in between conferences, the otherwise episodic experience.

Moreover, we are a society principally to promote the interest in our all-important subject and its use. Obviously we must draw strength from our gatherings at the hostels: but if we have a purpose, it is for mingling effectively and convincingly with others. Just as in the pilgrimages to Rome, in the 7th Century, the roaming of enterprising faithful generated hostels and cultural intermingling, let us now greatly increase our pilgrimages to the big homes of all human endeavours! In 1936 Terzaghi considered that "soil mechanics is already old enough to have acquired the modesty which springs from experience." I appeal to all, at this Golden Jubilee Conference, to recognize that geotechnical engineering has reached the age of the grandmother that may well have the serenity to transmit experience merely by an emanating presence within the big gatherings of the human family.

Let us be especially alert with regard to the explosively growing industries and their drive. Let us recognize their immense potentialities, and let us always rush to make ourselves present in their scouting excursions. By professional temperament and reality they exhale achievement, and the subconscious certainty of the perfect industrial regularity of multiples: both psychological backgrounds can be (and have often already proved) disastrous to geotechnical engineering. Let us never be tardy in mingling with them, in the same manner as an uncle can be of tempering influence on a boisterous young boy. I am happy to mention our initiatives in sponsoring of the technical committee on geotextiles and geomembranes, essentially simultaneous with the independent creation of the International Geotextile Society. As civil engineers, we must avoid splintering, and, at the least, guarantee walking through the forests side by side.

Repositories of Knowledge. Storage, Broad(P) Exchange, Retrieval. Judgment and Courageous Rejection. One of the most important functions of professional societies in the modern world is that concerning pertinent literature and its handling for efficient use. It occupied the entire presidential address of Arthur Casagrande, Montreal 1965. I myself have been intensely occupied with the problem ever since 1944-45 when working in the M.I.T. library stacks for my upkeep

as a student. In 1955-56, during a 3-month post-doctoral fellowship, I had the privilege of intense participations with Manuel Rocha, Director of the National Civil Engineering Laboratory of Lisbon, the ultimate center of civil engineering in the world for a couple of decades, himself very personally committed to the problem, and in 1966-67 once again as senior visiting professor at M.I.T., had the privilege of keen discussions while they were working on Project Intrex for the U. S. Dept. of Commerce, the computerized library of the future, interconnecting all libraries of the northern world for instantly viewed retrievals, etc.

Drawing on the sap from some of my roots I could rapidly conclude that as a dictator, benevolent of course, I would have solved all the problems in a few months, all the more so because as an engineer I believe in optimizing the good-enough for a start, and then applying the design-as-you-go method of inexorable revisions by the observational method. The truth is, however, that any such effort must begin from the broadest base of cooperation by volunteers from all member societies sending in the papers produced in their areas. Rapid key-word classification for easy retrieval accompanies and follows.

Casagrande insisted on adequate pre-selection of the papers meriting being registered. I question such thinking on pragmatic grounds of delay, and principally because of the risk of the Galileo Galilei complex, rejecting papers that might seem odd to the "establishment." Establishments have strong tendencies for inbreeding for self-perpetuation, and succumb in degeneration. Moreover, a judgment should neither be hurried, nor remain static. The most important modern need is for the garbage collector to make his periodic rounds. The need for forgetting, denying, recanting, rejecting is the most crucial need of today; it is continuous, because a paper accepted as valid in 1980 might well be invalidated by 1990. There are vested interests in books, and it may seem difficult enough to emit revised editions. Even these, however, are dangerously insufficient. Because of man's innate difficulty at recognizing anything but discontinuity, responsible technical publications should emit revised editions by featuring inserts of impact, that list in separate the errata, corrigenda, and addenda.(K)

The Information Advisory Committee has made big efforts but often seems to be walking on desert sands with lead shoes. Several agencies duplicate commercial efforts several-fold, in listing the selfsame publications, of the best known sources. The real need is to go beyond the obvious literature coverage, to explore the production from areas that are not at the crossroads of communications. Similar problems afflict the committees on geomechanical computer programs, on definitions-units-symbols-correlations, and on the lexicon.

Without being any Cassandra, I can foresee that the Trojan Horse that within a decade

may bring destruction into our fold will be the lawsuits against books and authors, as responsible for the errors and omissions that, in good faith, will have generated disasters and damage litigations. We should all reflect on such pretentious prospect. We teach methods and transitorily accepted information, but each professional, once "graduated", is fully responsible for his thinking, whether conventional, or creative, or discrepant.

Internal Professional Problems. A society such as ours draws its strength for facing the outer world of projects and clients, by maximizing internal discussions of topics of immediate and advanced interest. Any member society should be encouraged to postulate topics, not merely for coordination by the Research Cooperation Committee, but also for development by speciality seminars under the guidance of continued core-work by technical committees. The society membership has reacted very slowly and shyly to this magnificent opportunity of permanent exchange with fellow specialists across the world, by correspondence, by occasional discussion meetings "en petit comité," and, finally, by plenary discussion sessions, with the committee membership facing a worldwide audience that has, for consecutive years, been informed of the work undertaken and the persons involved.

Presently the special topics faced have been (1) penetrability and drivability of piles,(P) (2) filters, (3) tunneling in soils. Many prospects arise continually, such as (4) offshore geotechnical engineering, (5) hydraulic fill dams and tailings dams, and so on. We must be speedy in any rapidly growing area, to preserve the essence of the geotechnical engineer's approach. Special mention is made of a prospective technical committee on case histories revisited. At least two important situations need emphasis. Firstly, the case of major and/or catastrophic failures, which can only be reexamined objectively, a considerable time after the public and personal pressures have been forgotten. The other important situation involves two extremes brilliantly represented: on the one hand, the outstanding case generated by Terzaghi's own recommendation in Sweden 1946, the 35-year careful research study "long term consolidation beneath the test fills at Vasby, Sweden"; on the other hand, by his own strong recommendation (Rotterdam, 1948) "to increase the usefulness of our semi-empirical procedures we need in each one of the principal soil formations ... a great number of complete and reliable case histories," a recommendation that was filled far beyond expectation by the Tokyo 1977 Conference Special Volume on Case Histories. To me it seems that both extremes were carried too far, to a soberingly low profit to the practising professional.

Sobering indeed it may be to ponder that in engineering our efforts are dictated by benefit-cost reasonings: between decisions-actions and quest-knowledge-wisdom; between estimated knowledge and researched data; between laboratory and field, model and



prototype; and so on. And the optimum points generally lie in a carefully balanced compensation of extremes, between statistical generalizations from groups of but modestly-analogous case histories, and almost deterministically-controlled research efforts on single cases.

Mental Models and Computations. Older colleagues shudder at the thought of the appeal that computers and finite element methods, on the one hand, and statistical computations, on the other, have had on the younger energetic professionals. The transparent silken veils covering reality are most seductive. Intense numerical computations have lured many of the best brains, and pseudo-statistical mathematically idealized formulations seduce others; they are, indeed, much more attractive than dirtying one's hands with diverse muds, and much less frustrating than being tripped by the "minor geologic details." Yet, we must not behave as the ostrich is claimed to: the numerical computational storm is here to stay.

We attach great importance to our mental models for computations - thus the importance of the technical committee on constitutive equations, and of the efforts we have made to coordinate with the very successful ICASP Conference Group (International Conference on Applied Statistics and Probability). In the field of statistics, the engineering needs have been emphasized of:-

- (i) Distinguishing between statistics of extremes and statistics of averages;
- (ii) Engineering decisions based on upper and/or lower confidence bands, either of averages or of individual points;
- (iii) Real vs. mathematically simplified histograms;
- (iv) Inexorable tendency for asymmetrical trends.

In Bayesian probability decision, revising prior to posterior probability estimates, we must introduce adjustments because of the innate psychology that most engineers are far more afraid of failure, than eager for possible success, while a few optimists clearly gamble in the other direction.

The more powerful the weapons, the more careful we must be in their aim and use: such are the challenges facing numerical computation and statistics and probabilities, in the wake of a decelerated interest in analytical solutions. As Peck emphasized (Moscow 1973), "Nature, however, did not create deposits (or residual soil horizons) by random processes."

Special Testing. Brief but all the more emphatic is our mention of the recognition of the immense potentialities introduced by centrifuge testing. The Technical Committee on Centrifuge Testing has been producing very revealing insights into the behaviors of prototypes by a really ingenious modelling technique.

Site Investigation and Differentiated Soils and Geotechnical Problems. It is inexorable and natural that the work of technical committees should overflow from one presidential term to the following. However, as an engineering practice of self-disciplined efficiency, one should demonstrate the ability to subdivide into partial tasks and progress reports. I am coming to the end of my allotted time. If a bid on a big project is set for 3 p.m. on August 12, no amount of squealing will open the doors to someone arriving at 3:05 p.m. Moreover, a society should thrive from the imprint of varying philosophies, through different terms of office. "The old order changeth, yielding place to the new."

The European Penetration Testing Committee, with slightly revised terms of reference, became the International Committee on the same subject. The Site Investigation Committee is producing a compendium of case histories on the topic, in lieu of any proposals tending towards a manual. Do not underestimate the stifling dominance of any document printed under the aegis of ISSMFE as a would-be manual. The Field and Laboratory Soil Testing Committee has temporarily lowered its sights merely into recognizing differentiated optimized techniques in different soils, and thus concentrating firstly on the closed-cycle of undisturbed sampling and testing, as inseparable in each case. Of the many principal soil subdivisions visualized, for the present the only ones taken up were the residual soils and saprolites, and the soft rocks and indurated soils. In both, there is close interaction with geology, and in the latter, further close coordination with rock mechanics.

Finally, to return to the origins of our society, the enrichment to be developed from exchanges of experiences with regard to widely different soils, I report with special pride the contribution made by the first International Conference on Tropical Laterites and Saprolites. Moreover, the so-called special soils often discussed at international conferences, the expansive soils and (N) collapsible soils, have been received with open arms as cherished members of the same big geotechnical family. We are sure that such steps favouring interaction with other specialists facing quite different problems, is the one fundamental purpose of our international society.

#### Final Key-Word, Humility.

Have I said anything but what has been said repeatedly before? What of our future?

"If I have the gift of prophecy and know all mysteries and all knowledge; and if I have all faith, so as to remove mountains, but have not love, I am nothing."

Let us take ourselves jovially and jokingly, as participants in a game of peace.

"Peace hath her victories  
No less renowned than war." (Milton)

The observational method? ...Yes, but it

often degenerates into a trial-and-error sequence, wherein you hope that there will be (1) for yourself, one more trial than errors,(2) for others, occasionally the reverse, from which we learn.

Are we still together as we finish our concurrent tasks? No function merits being recognized as vital if it is not very much alive, creative, progressive, therefore self-effacing.

If there is some creativity, the true seed of engineering, be it gratefully attributed to God or the Karma. The effort, which is up to us to contribute, derives from the philosophy of life that parents and teachers instilled, of loving our profession and its potential of service to all. The attempt to balance the extremes of some pride in a temporal achievement, and the immense humility at its true nothingness, is what I leave as my message.

Let us move onwards towards a very cheerful and successful conference. San Francisco is lovely. People are lovely. The conference program and arrangements are lovely. Meeting friends and colleagues is lovely. And "Beauty is truth, and truth beauty. That is all we know on earth, and all we need to know."

**KEVIN NASH GOLD MEDAL**

1. TRIBUTE TO  
 1.1 HIS CONTRIBUTION TO THE SOCIETY  
 1.2 HIS IDEALS TO BE FOSTERED
2. AWARDEE  
 2.1 DISTINCTION AS AN ENGINEER  
 2.2 INTERNATIONAL CONTRIBUTIONS TO  
 a) ENGINEERING PRACTICE  
 b) EDUCATION  
 c) INTERNATIONAL GOODWILL  
 d) FOSTERING IDEALS AND GOALS OF THIS SOCIETY THROUGHOUT THE WORLD
- 2.3 SERVICE TO ISSMFE/SIMSTF



(A)



(B)



(H)

**LARGE DAMS (C)**

MEMBER COUNTRIES	PAYS MEMBRES
ALBANIA	LEBANON
ALGERIA	LUXEMBURG
BANGLADESH	MADAGASCAR
CYPRUS	MALAYSIA*
GUATEMALA	SRI LANKA
IRAQ	SUDAN
IVORY COAST	THAILAND*
JORDAN	TUNISIA
KENYA	ZAMBIA
KOREA (REP OF)	

\* SE ASIAN SOCIETY OF ISSMFE/SIMSTF

**PAST PRESIDENTS**

K. TERZAGHI	1936-57	AUSTRIA
A.W. SKEMPTON	1957-61	USA
A. CASAGRANDE	1961-65	USA
L. BJERRUM	1965-69	NORWAY
R.B. PECK	1969-73	USA
J. KERISEL	1973-77	FRANCE
M. FUKUOKA	1977-81	JAPAN

HONORARY PRESIDENT FOR LIFE (1963)

**(D)**

**TERZAGHI TRIBUTES U.S.A. (ASCE / USNS)**  
 INSTITUTED 1963

**KARL TERZAGHI AWARD AWARDEE**

OUTSTANDING, CONTINUING CONTRIBUTION TO GEOT. ENG'G IN U.S. THROUGH PUBLICATIONS

- 1963 A. CASAGRANDE
- 1965 M. JUUL HVORSLEV
- 1968 W.J. TURNBULL
- 1969 R.B. PECK
- 1971 L. BJERRUM
- etc...
- (APPROX BIENNIAL)
- 1980 A.W. SKEMPTON
- 1982 LYMON C. REESE

**TERZAGHI LECTURE AWARDEE**

CONTINUING CONTRIBUTIONS TO TECHNICAL AND/OR PROFESSIONAL STATURE OF GEOTECHNICAL ENGINEERING

- 1963 R.B. PECK
- 1964 A. CASAGRANDE
- 1967 L. BJERRUM
- 1967 H. BOLTON SEED
- 1969 P.C. RUTLEDGE
- etc...
- (ANNUAL)
- 1982 J. BARRY COOKE
- 1983 R.F. SCOTT
- 1984 J.K. MITCHELL



(D)

**(F)**

**RANKINE LECTURE, BGS (U.K.)**

1. GENERATED BY LONDON 1957  
 I<sup>st</sup> ICSMFE
  2. RECALLING RANKINE'S 1857 PAPER 'ON THE STABILITY OF LOOSE EARTH'
  3. PERSON OF DISTINCTION IN THE FIELD OF SOIL MECHANICS
- 1961 A. CASAGRANDE
  - 1962 L.F. COOLING
  - 1963 A. MATER
  - etc.
  - 1983 E. HOEK
  - 1984 C.P. WROTH
  - 1985 N. JANBU

(FOREIGN GEOTECHNICIANS AND BGS MEMBERS ELECTED IN ALTERNATION)

**TERZAGHI PRIZE (BRASIL)**

INSTITUTED 1964 BIENNIAL

**AWARDEE**

MOST SIGNIFICANT CUMULATIVE CONTRIBUTION TO GEOTECHNICAL ENGINEERING IN BRAZIL, OR MOST OUTSTANDING PUBLICATION DURING THE BIENNIAL

- 1966 M. VARGAS, A.J. COSTA NUNES, V.F.B. DE MELLO (ACCUMULATED CONTRIBUTIONS)
- 1968 F.P. SILVA (ACCUM. CONTRIB.)
- 1970 H.P. CAPUTO (ACCUM. CONTRIB.)
- etc.
- V.F.B. DE MELLO (PAPER)
- 1978 P.T. CRUZ (ACCUM. CONTRIB.)
- 1980 F.O. FRANCIS, M.A. KANJI, M.D. RUIZ (ACCUM. CONTRIB.)
- 1982 F. MASSAD, J. MEDINA (ACC. CONT.)
- 1984 C.A. DINIZ GAMA, G. GUIDICINI (ACC. CONT.)

(E)

**R.F. LEGGET AWARD (CANADA)**

INSTITUTED 1969 ANNUAL AWARDEE EXCEPTIONAL SERVICE TO GEOTECHNICAL ENG'G. IN CANADA

- 1970 R. PETERSON
- 1971 R.W. HARDY
- 1972 N.W. MULLICO
- 1973 V. HILLIGAN
- 1974 S.S. MEYERHOF
- etc.
- 1982 D.J. BAZZETT
- 1983 J.I. CLARK
- 1984 L. SAMSON

(G)

**(G)**

**J.E.B. JENNINGS AWARD (SOUTH AFRICA)**

INSTITUTED 1978 ANNUAL AWARDEE AUTHOR OF MERITORIOUS PAPER IN GEOT. ENG'G IN SOUTH AFRICA PUBLISHED DURING THE YEAR IN S.AFRICA OR ELSEWHERE

- 1979 F. NETTERBERG
- 1979 A.B.A. BRINK
- 1980 —
- 1981 S.A. JONES / R.A.J. VAN ZYL
- 1982 —
- 1983 F. VAN W. WAGENER

**NABOR CARRILLO LECTURE (MEXICO)**

BIENNIAL AWARDEE DISTINGUISHED MEMBER OF NATIONAL OR INTERNATIONAL COMMUNITY TO DEVELOP AND DISCUSS A SUBJECT OF IMMEDIATE INTEREST

- 1972 A. CASAGRANDE
- 1974 R.B. PECK
- 1976 A. KEEZI
- 1978 JOHN LOWE III
- 1980 R. HARBAL
- 1982 A.J. HENDERSON JR.
- 1984 L. ZEEVAERT

**Laurits Bjerrum Memorial Lecture (Norway)**

AWARDEE GEOTECHNICIAN OF INTERNATIONAL STATURE

- 1979 F.C. KENNEY
- 1977 K. HOEK
- 1976 S. TORHEIM
- 1975 E. DILLARD
- 1980 R.B. PECK
- 1982 K. HORTENSEN
- 1983 R. HERTZOG
- 1985 K. BARTON

**John Jaeger Memorial Medal (Australian Geomechanics Society)**

1979 4-YEARLY, AT AUSTRALASIAN GEOMECHANICS CONFERENCE ULTIMATE RECOGNITION OF THE SOCIETY, TO AN AUSTRALIAN, FOR DISTINGUISHED CONTRIBUTIONS TO GEOMECHANICS

- 1979 E.H. DAVIS
- 1984 S. AITCHISON

(G)

ARTHUR CASAGRANDE TRIBUTES  
(SOUTH AMERICA/USA) (G)

- 1- ARTHUR CASAGRANDE LECTURE  
INSTITUTED 1983 BY ISSMFE VICE-PRESIDENCY  
FOR SOUTH AMERICA  
DELIVERED AT 4-YEARLY  
PANAMERICAN CONFERENCE  
AWARDEE . ULTIMATE AWARD TO ENGINEER  
IN PRACTICE OF SOIL ENGINEERING IN SOUTH  
AMERICA, AS MEMBER OF S.AMERICAN MEMBER  
SOCIETY .

I. A. J. COSTA NUNES  
(FOR COLOMBIA 1987)

- 2- CASAGRANDE FELLOWSHIP AWARD  
(USNS /ASCE GT. DIV.)  
INSTITUTED 1985  
TO SUPPORT A DESERVING PROJECT BY A  
PROMISING WORKER  
SOME PRIORITY TO ASCE MEMBERS BUT  
AVAILABLE TO WORLDWIDE CANDIDATES

(G)

(I)

I. STRENGTHENING CENTRAL  
ORGANIZATION

I.1 REVISION OF STATUTES

STATUTES - ESSENCE, "IMMUTABLE"  
SPINAL COLUMN  
BY - LAWS } SINEWS FOR  
POLICIES } AGILE PUNCH

I.2 GENERAL SECRETARIAT

- a) FILES AND ROUTINES  
b) LIBRARY OF SOCIETY'S OWN HISTORIC  
RECORD, CONFERENCE PROCEEDINGS, ETC.

I.3 BUDGETTING AND FINANCES

- a) FOR GENERAL SECRETARIAT  
b) FOR REGIONAL VICE-PRESIDENCIES

I.4 LIST OF MEMBERS : CONTINUAL UPDATING  
FURNISHED BY MEMBER SOCIETIES

I.5 PRINCIPLES OF TECHNICAL COMMITTEE  
ACTIVITY AND REGIONAL TECHNICAL  
SUBCOMMITTEES

- PROGRESS REPORTS  
DISCUSSION OBLIGATORY  
PUBLICATION  
FINANCING AND PROCEEDS

I.6 SYMBOL - LOGO

I.7 WORLDWIDE PRESENCE - ISSMFE NEWS  
REGIONAL NEWS INITIATIVES  
EQUAL OPPORTUNITY ADVERTISING.

I.8 PRAGMATIC TRY AT RESEARCH COOPER  
ATION COMMITTEE ACTIVITIES

I.9 MEMBER SOCIETY COMMEMORATIVE  
VOLUMES VOLUNTEERED FOR THIS CONFERENCE

I.10 PREPRINT DISTRIBUTION OF CONFERENCE  
PAPERS, ON REQUEST, FOR ENHANCED TECHNICAL  
DISCUSSION SESSIONS

I.11 DISCUSSION SESSIONS ENTRUSTED TO  
TECHNICAL COMMITTEES

I.12 PROVISIONS FOR PRESIDENT - ELECT AND  
INCOMING OFFICERS AT THIS VENUE  
CONTINUITY

I.13 ADMINISTRATIVE COMMITTEES  
(PROPOSED PERMANENT)

I.14 TECHNICAL COMMITTEES ON  
SPECIALTY TOPICS

I.15 ENHANCED INTERCHANGE WITH  
a) SISTER SOCIETIES - ISRM, IAEG  
(PERMANENT COORDINATING SECRETARIAT)

b) USER SOCIETIES, AND PUBLIC  
( ICOLD, ITA, etc. )

c) COLLATERAL SOCIETIES  
OF SPONTANEOUS GENERATION  
(AVOIDING SPLINTERING)

(I)  
2.3.4 INCREASED LOCAL AND REGIONAL ACTIVITIES

(WITHIN THE INTERNATIONAL TEAMWORK)

1. MEMBER SOCIETY CONFERENCES, SEMINARS ETC. STRONGLY STIMULATED AND SPONSORED
2. MEMBER SOCIETY EMULATION
  - a) VOLUNTEER CONDUCT OF ISSMFE TECHNICAL COMMITTEES
  - b) INCREASED NRS OF INVITATIONS TO PARTICIPATION
  - c) NOMINATIONS FOR PARTICIPANTS IN COMMITTEES FOLLOWED BY JUDICIOUS SIEVING. "MANY SHALL BE CALLED BUT FEW SHALL BE CHOSEN".
3. WORLDWIDE PARTICIPATION IN INFORMATION ADVISORY COMMITTEE (PUBLICATIONS ETC.)
4. LECTURERS, CONSULTANTS  
TRAVELLING MINSTRELS OF MODERN WORLD

(J)  
TECHNICAL COMMITTEES ON

1. PRESERVATION OF OLD MONUMENTS AND CITIES (FRANCE)
2. LANDSLIDES (CANADA)
  - 2a. EUROPEAN SUBCOM. STABILIZATION OF LANDSLIDES IN EUROPE (TURKEY)
  - 3a. SUBCOM. ON EARTHQUAKE GEOTECHNICAL PROBLEMS IN EUROPE (ITALY)
4. ALLOWABLE DEFORMATIONS OF BUILDINGS, AND DAMAGES (MEXICO)
5. GEOTEXTILES AND GEOMEMBRANES (USA)
- 6a. SUBCOM. ON TUNNELING IN EUROPE (FRG)
7. PENETRABILITY AND DRIVABILITY OF PILES (JAPAN)
8. FILTERS (SOUTH AFRICA)
9. CENTRIFUGE TESTING (U.K.)
10. CONSTITUTIVE EQUATIONS (JAPAN)
11. SITE INVESTIGATION (1979-?)
12. PENETRATION TESTING (SWEDEN)

13. UNDISTURBED SAMPLING AND LAB. TESTING OF
  - 13a. RESIDUAL SOILS AND SAPROLITES (SE ASIA)
  - 13b. SOFT ROCKS AND INDURATED SOILS (AUSTRALIA)
14. TROPICAL LATERITES AND SAPROLITES (BRASIL)

(J)

(K)  
ADMINISTRATIVE COMMITTEES ON

1. SUBCOMMITTEES :
  - REVISION OF STATUTES
  - LIST OF MEMBERS FORMAT
2. POLICY REGARDING MANUALS, STANDARDS, CODES
3. PROFESSIONAL PRATICE, ETHICS, AND RESPONSIBILITIES
4. INFORMATION ADVISORY (FRG)
 

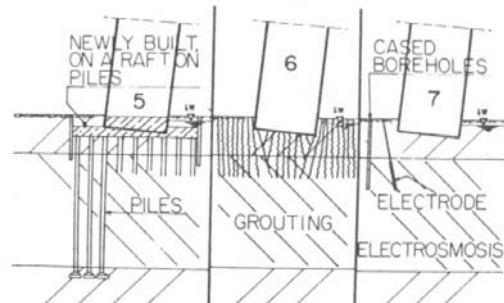
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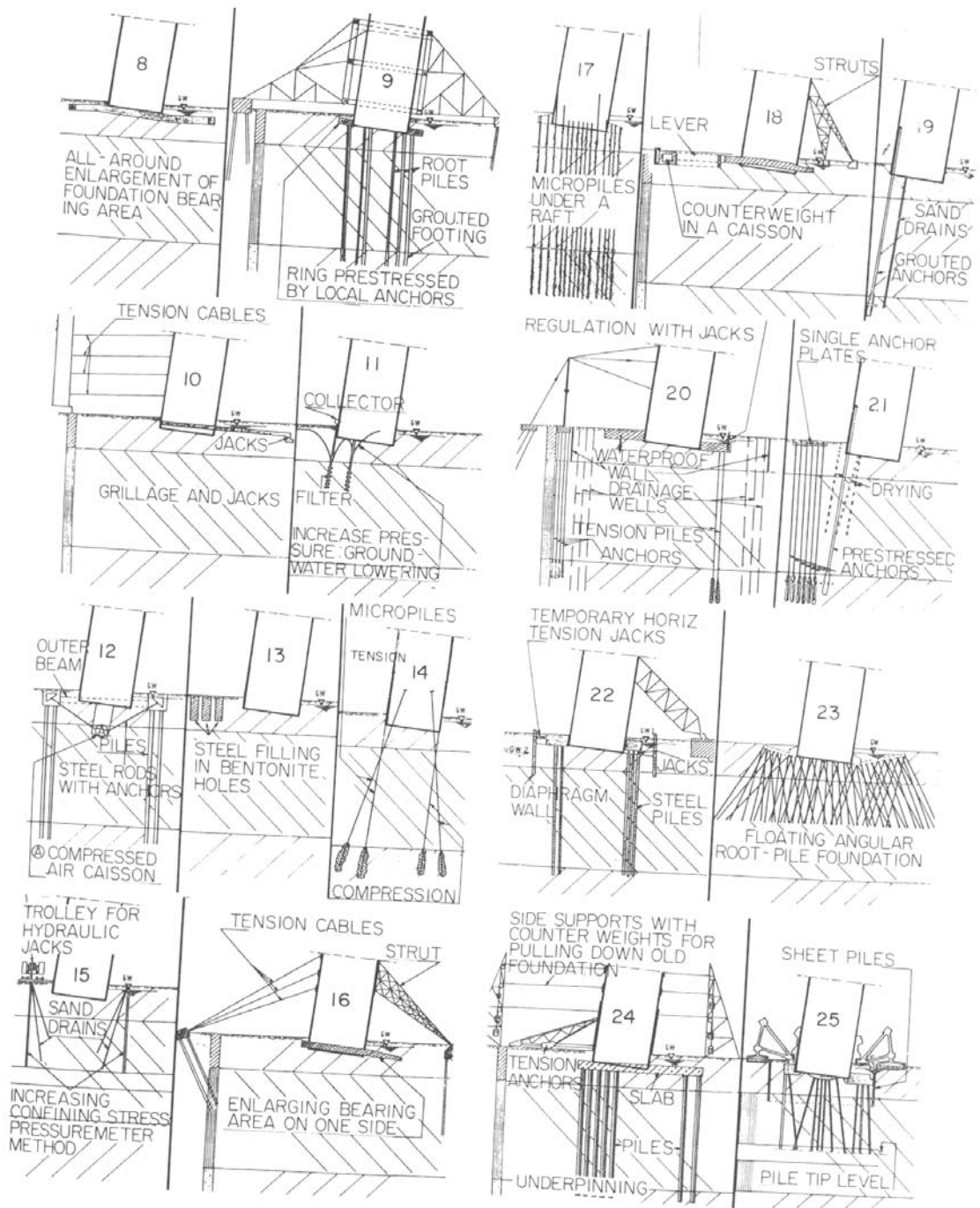
 GEOMECHANICAL COMPUTER PROGRAMS (CANADA)
5. RESEARCH COOPERATION
 

( CRAWFORD, V. PRES. N. AMERICA ,  
BROMS, BOARD MEMBER CHOSEN )
6. DEFINITIONS, UNITS, SYMBOLS AND CORRELATIONS (FRANCE)
 

↑  
↓
7. LEXICON (REVISIONS, ADDENDA)

FIG. 2 CONTD. SOLUTIONS 5-25, CF. P. 2486









(L)

OLD MONUMENTS . BIG SETTLEMENTS  
( e.g. MEXICO )



DIFFERENTIATED AND PROBLEM SOILS : (N)  
e.g. EXPANSIVE CLAYS , SHRINKAGE , HEAVE



GEOLOGY AND GEOTECHNICS e.g. IN  
LANDSLIDES . HOPE SLIDE , CANADA .  
(M)

MAN AND HIS ENVIRONMENT . THE  
CIVIL ENGINEERING GEOTECHNICIAN FACING  
TIME , NATURE , AND SOCIETY

TECHNICAL COMMITTEES ON :

1. PRESERVATION OF OLD MONUMENTS AND CITIES
2. LANDSLIDES (M)
  - 2.1 EUROPEAN SUBCOMMITTEE ON STABILIZATION OF LANDSLIDES IN EUROPE
3. ALLOWABLE DEFORMATIONS OF BUILDINGS, AND DAMAGES
4. POLICY REGARDING MANUALS , STANDARDS, CODES
5. PROFESSIONAL PRACTICE , ETHICS AND RESPONSIBILITIES

(P)

1. INTENSIFIED RELATIONS WITH OTHERS .
  2. REPOSITORIES OF KNOWLEDGE .  
BREADTH AND SPEED OF STORAGE - RETRIEVAL  
CONTINUAL JUDGMENT . COURAGEOUS CRITICISM
  3. VARIED INTERNAL PROFESSIONAL PROBLEMS :  
e.g. FILTERS  
DRIVABILITY OF PILES , etc .
  4. MENTAL MODELS , COMPUTATIONS .  
CONSTITUTIVE EQUATIONS , FEM  
STATISTICS AND PROBABILITIES
  5. SPECIAL TESTING e.g. CENTRIFUGE .
  6. DIFFERENTIATED SOILS .  
INVESTIGATION , CHARACTERIZATION  
SPECIAL GEOTECHNICAL PROBLEMS
- FINAL KEY - WORD HUMILITY .



·HYDROLOGY AND GEOTECHNICS IN URBAN PROBLEMS. e.g. HONG-KONG SLIDES .

(M)



CATASTROPHIC SLIDES, RISKS , DAMAGES, PROBABILITIES e.g. HONG-KONG .

International Society for Soil Mechanics and Foundation Engineering:  
Executive Committee Meetings

Société Internationale de Mécanique des Sols et des Travaux de Fondations: Réunions du Comité Exécutif



President Victor F.B. de Mello presiding at the Executive Committee Meeting preceding the Conference.



ISSMF President, Presidential Address, Victor F.B. de Mello (Brazil).



President Victor F.B. de Mello (Brazil) presenting Kevin Nash Gold Medal to H. Bolton Seed (USA).



Victor F.B. de Mello (Brazil) passing gavel to President Elect Bengt Broms (SF Aelia)