

FOREWORD

The Pakistan Engineering Congress was originally established in the year 1912 under the name “Punjab Public Works Department Congress”. It was a very bold and novel step because it was the first association of its kind, founded with the cardinal objective of promoting engineering profession and science so essential for the economic advancement of the country. It provided an opportunity and a Forum for engineers to get together, deliberate on the vital engineering issues confronting the sector and above all updating their knowledge. In 1916 its name was changed to “Punjab Engineering Congress”. In 1955, upon amalgamation of the provinces in West Pakistan, it was renamed as “West Pakistan Engineering Congress”. Again on separation of East Pakistan in 1971 its name was changed to “Pakistan Engineering Congress”. During the first fifty years of its history the Congress membership was essentially confined to the various branches of Public Works Department (P.W.D.) and the Railways. However, afterwards more Departments were included and later the private sector also joined.

The objective was grand and sublime but the journey was daunting and full of trials and turbulations as the organization did not have its own dedicated premises, financially weak and was fund starved. Ever since its inception in 1912, the Pakistan Engineering Congress (the Punjab Engineering Congress) functioned without any office of its own. Its meetings had to be convened in the Railways Headquarter office, Town Hall, PWD secretariat and elsewhere found opportune. As a result of a long and epic struggle the Congress now proudly owns its own four (4) storey magnificent edifice at a very prominent and central location near Liberty Roundabout, Gulberg, Lahore. The Congress is now a financially sound and self-financing organization. Its membership which was essentially confined to the various branches of PWD, Railways etc. now stands at 4,703 and consists of engineers working in different public/private organizations, consulting engineers, self-employed engineers, educationists serving/retired engineers, scholars from all provinces of the country and is attracting large swathe of Engineering community. The Congress is managed by an Executive Council of elected representatives who all volunteer to work in honorary capacity.

The congress web-site www.pecongress.org.pk amongst other matters shows a rich heritage of technical papers and engineering knowledge.

a)	Technical Papers on development projects (Dams/Barrages/ Canals) / Technical issues covering the last 100-years accepted as a valid source of reference on these projects and issues	707-Technical Papers in (71-Volumes)
b)	Symposium papers on issues of National importance in 33-volumes	293-papers in (33-volumes)
c)	Quarterly Journal of the Congress “Engineering News”	666-papers

Pakistan Engineering Congress achieved a number of milestones in its continued journey forward:

- During the Golden Jubilee Session in 1963, a chronology of first fifty years prepared by Dr. Mubashir Hassan and Late Mirza Latif was published.

- At the auspicious occasion of Diamond Jubilee a comprehensive “History” of the congress covering the period upto 1987 (i.e. 61st Annual Session) alongwith a number of other publications was published.
- **Centenary Celebration (1912-2012)**
- The Congress has now completed 100-years of its glorious existence. A series of events have been planned commensurate with the stature of this oldest and most prestigious association of Engineers. It is a mega event spread over 4-days in December-2012, and will be participated by an impressive galaxy of engineers of all professions drawn from all over the country as well distinguished delegates from a number of countries with whom the Congress has forged close liaison over the years. The following publications will be issued at this auspicious occasion:
 - History of the Congress covering the period 1912-2012 in 2 volumes*
 - Book of proceedings containing 24-Technical papers on myriad engineering projects, issues.
 - Special edition containing performance reports of leading public/private sector organizations
 - Summary of Gold Medal winning Papers covering the period 1912-2012
 - Book of Symposium papers on the topic of “Emerging Phenomenon of Untimely Rains / Floods – 2011 in Pakistan”.

We earnestly believe that perusal of the “History” of the Congress will infuse a new and powerful spirit of selfless devotion to the noble cause of advancement of engineering education, profession of engineering and an urge for finding new ways of professional excellence.

(Engr. Riaz Ahmad Khan)

President

PAKISTAN ENGINEERING CONGRESS CHRONOLOGY OF 100 YEARS

The Pakistan Engineering Congress was established in 1912. At the time of formation it was named as Punjab Public Works Department Congress. The name was later changed to Punjab Engineering Congress. In 1955, upon amalgamation of the provinces in the western wing of Pakistan, it was renamed as West Pakistan Engineering Congress.

On Saturday the 3rd of February 1912, ninety officers belonging to the Irrigation Branch, the Buildings and Roads Branch and the Railway Branch met to form the Congress. Of these, 74 were British, 16 Indians, one among them being a Muslim. Mr. W.S. Dorman, Executive Engineer, B&R Branch, who was to act as Secretary for many years to come, played a leading part in the formation of the Congress. In fact, in his presidential address delivered before the Congress in April 1920, Mr. A.S. Montgomery said that the Congress "was started by our excellent Honorary Secretary Mr. W.S. Dorman in 1912". The object of the Congress was declared:

"to promote the well being of the Department by affording members an opportunity of meeting annually to discuss subjects of professional or departmental interest and for social intercourse."

Membership of the Congress was open to Gazetted Engineer-officers of the P.W.D. including Temporary Engineers. The original proposal to restrict membership to the Punjab officers was dropped. A General Committee consisting of President, two Vice-Presidents and twelve Members (representatives from the three Departments) was elected to make arrangements for the first session of the Congress the following year. The General Committee was empowered to appoint an Executive Committee to transact all ordinary business connected with the Congress. A provision for Honorary Membership was adopted during the first meeting to enable Municipal and District Engineers holding Diplomas from some recognised engineering institutions to become members. The annual subscription was fixed as Rs.5/-.

The following were the first office-bearers:

President		Sir Harry Burt.
Vice President		Mr. W. E. Bennet.
Vice President		Colonel Maclagan.
Members		
Mr. A. Rowland	}	Railways Branch.
Mr. J. Southerland		
Mr. W.D. Rodgers		
Mr. V. Stanton	}	Buildings & Roads Branch.
Mr. W.S. Dorman		
Mr. R.E. Omors	}	Irrigation Branch
Mr. A.R. Murray		
Mr. O.H. Lee		
Mr. Baij Nath		
Mr. R.O. Hadow	}	Irrigation Branch.
Mr. J. Ashford		
Mr. G. Gemmell		

In those days it was not necessary for the President to be stationed in Lahore. It was to suit his movements that the meetings of the General Committee were fixed.

The first meeting of the General Committee was held on Tuesday the 27th of February 1912. The annual subscription was raised from rupees five to ten. Sending of notice to all Members in the following term was approved:

"The General Committee while welcoming papers on any professional subject put forward the following list as likely to be of interest for the next Congress: —

- (a) Reservoirs for conserving the surplus waters of the Punjab Rivers.
- (b) Prevention of Sedimentation in canals.
- (c) Rise and fall of sub-soil water as effected by irrigation and drainage.
- (d) Tubewells for town supply and irrigation.
- (e) Mechanical appliances to supplement hand labour in engineering construction in the province.
- (f) Mechanical equipment for irrigation works.
- (g) River Training, more especially with reference to the construction of channels for the purposes of railway bridging.
- (h) Best means to be adopted to extend the usefulness and influence of the Congress so as to embrace the whole profession in India."

The last named objective was upper-most in the minds of the founders of the Congress. In a meeting held during the same month, the General Committee directed the Executive Committee "to take steps to bring to the notice of leading men of the profession in other Provinces the action taken in the Punjab in forming this Congress with a view to similar action being taken by them in their own Provinces, the idea being eventual bounding together of all such movements into one coordinate body for all India."

The first Session of the Congress was held in the Town Hall on 10th February 1913. at 2.30 p.m. The Session lasted two days and it concluded with a garden party at which Rs.2/- per head were charged. A band was in attendance and arrangements were made for tennis and badminton. The proceeds of the Party exceeded the expenditure by Rs.39/11/6.

During the same year, the Honorary Membership was thrown open to the Royal Engineers and the idea of presenting a Gold Medal for the author of the best paper was conceived. A recruitment drive for membership was also launched.

It looks as if in the earlier years it was not the practice for the President to deliver regular presidential address. At least it is not available for 1913 and 1914. In 1915 the Vice President of the Congress Mr. F. E. Gwyther in his opening remarks regretted the enforced absence of President Colonel Maclagen and made the announcement that their brother officers in Burma and Bombay had started Engineering Congress on very similar lines to theirs, while the Government of India had also shown their appreciation of such congress by convening one for all India at Simla in 1913. These facts, he thought, went to show that the Congress was useful, for purposes of exchanging experience, as well as for trying to secure unity, and for refreshing personal friendship.

By 1916 the Congress had been well established. The membership had risen to 196. The first Gold Medal of the Congress was awarded to Mr. T. A. Curry for his paper on Lining Irrigation Channels.

The 1916 session was marked by the presence of the Lieutenant Governor of the Punjab for the first time. In his address the Governor observed:

Colonel Cra'ster and Gentlemen—It is a great privilege and pleasure to be asked to attend the Congress this year; and I am proud of the fact that the Punjab, in this and so many other matters, has set the lead to the rest of India (applause). I understand that the Congress in this Province is the first to have been organised. It is only right and fitting, for, though this is the youngest of the great provinces of India, no province has provided so much scope for the labours of engineers, and no province has profited so much by their labours. This applies to every branch of the engineering profession; we have examples all around us.

The Governor (who was also called the Ruler) further observed:

In touring over this province one can hardly take step without coming in contact with the results of your labours in one direction or another, and if now and again they furnish matters for that criticism, which those of us, who only imperfectly understand the difficulties you have to contend with, are prone to indulge in; they more frequently give us reason for pride and satisfaction. It is to discuss those problems, to eliminate any evil results, and to extend the good results, that you have met here to-day. I am sure that the discussion will be full of value to yourselves and also to Government (applause).

In 1916 the name of the Congress was changed to "Punjab Engineering Congress." It was the same year when the Viceroy of India had formally opened the Upper Jhelum Canal, a Project costing nearly 4.5 crore rupees, as also the King Edward Memorial and Veterinary College and Hospital at Lahore.

It was during this year that the members of the Congress were allowed to draw travelling allowance for attending the Congress. The Governor announced in the meeting:

"I am glad, in so far as this Local Government is concerned, to have done something to facilitate matters by allowing officers, who attend the Congress, to draw travelling allowance (applause). It is not fair to those who come together to pool their experience for the common good that they should suffer monetary loss thereby."

The meetings of the Committee used to be held at different places—at the N.W.R. Agent's office. Town Hall, P.W.D. Secretariat and in the office of Chief Store-keeper of the Railways. The members were working with great energy, confidence and with a sense of achievement. A member who had submitted a paper to the Congress on finding out that his paper might also be published by the Institution of Civil Engineers, London asked if the Congress was prepared to forego its claim on his paper. The matter was put before the General Committee where it was decided to inform the author that having accepted his paper the Congress was not prepared to relinquish its claim and further that "his paper was too good to waste on the Institutions."

In 1917 in his presidential address Col. S.L. Cra'ster narrated the development of Railways in the sub-continent. He observed:

"Good though the roads were, it was evident that railways must supplement them as main arteries of communication. The earliest of these built within the limits of this province was the section from Multan to Amritsar, designed (in conjunction with a steam flotilla from Multan to Kotri, and the Sind Railway from Kotri to Karachi) to obtain direct access to the sea. Begun in 1859, the section between Amritsar and Lahore was opened for traffic in 1862, and three years later extended to Multan and Sher Shah the river port of Multan. Ere this, connection with Delhi had been decided on, and, was completed in the spring of 1870, when the Sind, Punjab and Delhi Company was formed to

amalgamate the Sind Railway, the Punjab Railway and the Delhi Railway, under a Government guarantee of five per cent interest. The weak link in the chain between Amritsar and Karachi was the river journey, for it took three weeks to accomplish the distance from Kotri to Sher Shah, when coming upstream. In 1878 this was superseded by the Indus Valley Railway, which ran from Multan to Rohri on the left bank of the river, and onward from Sukkur to Kotri on the right bank, passengers and wagons being ferried to and from between Rohri and Sukkur."

He further exhorted the engineers to work selflessly and said:

"The Engineer, be he ever so energetic enthusiastic, is bound to feel jaded and heart-weary at times, and to all such I would command the lines of Clough, the poet, when he says:

"Go with the spiritual life, the higher volition and action.

With the great girdle of God, go and encompass the earth.

Not for the gain of gold, for the getting, the hoarding, the having.

But for the joy of the deed—but for the Duty to do.

In those days the members of the Congress evinced great interest in the activities of the engineering profession in all spheres. At the 1918, Session, the President of the Congress, the Hon'ble Mr. D.W. Aikman, Chief Engineer and Secretary to Government, Buildings and Roads Department, dealt at length on the role of engineers during the war. He spoke not only about the engineers of his, own side but also of the preparedness, training and works of the enemy engineers.

Since its very formation, the members of the Congress had been attempting to stir up other Provinces in India to form bodies of engineers similar to the Punjab Engineering Congress. The ultimate objective in the minds of the founders was an All India Institution of Engineers comprising a federation of the Provincial Congress. By 1918 Burma, Bombay and Mysore formed their own associations. Their constitutions were studied by the Congress. Changes were made in its own constitution to have a uniformity.

In his Presidential Address before the 1920 Session, Mr. A.S. Montgomery was in apposition to claim:

In November 1918, on the termination of the war, the committee decided to communicate with Bombay, Burma and Mysore asking them to join in getting all Provinces to start similar Provincial Associations, which would ultimately combine to form an All-India Association. The seed thus sown has sprung up into the Institution of Engineers (India), and we may rightly claim, in my opinion, the majority of the credit for its creation.

However, the matters did not end there. The annals of the Congress are replete with long drawn out negotiations and communications between the Congress and the Institution of Engineers, India (during its formative stages and after its formation) for a union with the Institution. For nearly thirty years with the Institution of Engineers India and later on with the Institution of Engineers Pakistan the stand taken by the Congress has been that it would welcome an association which does not amount to merger or loss of its own identity. It goes to show how zealous and tanacious the Congress has been in preserving its identity and status.

In 1920, Mr. Dorman who had worked as Secretary since the formation of the Congress decided to lay the reins of the office. The Congress President observed before the Session:

Mr. Dorman is to proceed on well-earned furlough very shortly, and, I am sure gentlemen, I may extend to him on your behalf, every good wish during his time at

home, and that I express the voice of this Congress, when I thank him from the bottom of our hearts for all that he has done for us. Engineering in India and in the Punjab particularly, owes a deep debt of gratitude to Mr. Dorman, who devoted all his energy towards furthering the interests of Punjab engineers, by enabling us to meet here for the purpose of friendly discussion on matters, of interests and by so efficiently organizing these meetings, which help greatly towards good feeling between officers of the various branches of engineering. Doubtlessly it will be remembered by all, that our last meeting was held under some difficult and peculiar circumstances, when Mr. Dorman was not only carrying out his work as our Honorary Secretary but was also, armed to the teeth, carrying on as Sergeant in the Indian Defence Force.

The Congress instituted a Dorman Presentation Fund in which Rs.547/- were collected towards expenditure of a present for Mr. Dorman.

From the remarks of the Lieutenant Governor of the Punjab before the 1920 Session it is apparent that the papers presented before the Congress in those days, which had averaged ten yearly, had a decided impact on the Government policies pertaining to the works of development. The Governor had observed;

I may say that of the numerous valuable papers which were read at the last session, there are two, and possibly more, which had a distinctly substantial effect on engineering development in this Province. Speaking for myself, if it had not been for having read Mr. Milne's paper on the supply of electric power, I should not have welcomed as warmly as I did, the opportunities which offered themselves last autumn, for making a start on the examination of the Sutlej Power Scheme, and I believe that if it had not been for Mr. Dorman's paper on Highways in the Punjab, our Communications Board would not have been started as early as it was.

The Congress by this time was well conscious of its role to guide the technical destiny of the province. In 1921 Mr. F.T. Bates in his presidential address enumerated the subjects on which papers for next session should be written. It will be seen that subjects suggested are the one that were to dominate the technical horizon for the years to come. He concludingly remarked:

Gentlemen. In closing my address may I claim the privilege as your President on this occasion of suggesting certain subjects for papers for future Congress meetings. The subjects are those which I think you will admit are of some importance. There are three that are uppermost in my mind, viz:

- (1) The introduction of mechanical appliances to meet the increasing deficiency in manual labour in this country. We have arrived at a stage at which, unless machines are introduced, we shall be brought to a standstill on large works of urgency.
- (2) The second subject is the most suitable utilization of the energy available at canal falls. I think that with the greater familiarity growing up round us of things electrical, we should bestir ourselves to see that available power, wherever found, is suitably harnessed to do some useful work.
- (3) The third subject is that of a cheap form of building construction for small dwellings. There appeared recently in one of the engineering papers a method of pressed clay construction for walls in small buildings. It seems to me that pressed clay, or clay strengthened in some way to stand increased pressure, offers a wide field for the builder of small dwellings, and investigations into the possibilities would amply repay the cost and trouble taken.

The presidential addresses of the Congress are replete with novel ideas and embody the thinking of the time. Some time we confront the mention of such projects, which perhaps never materialized but are nevertheless interesting. Mr. W.P. Sangster in 1922 says:

The prospects for the development of agricultural tramways in various parts of the Province have been investigated by the Agricultural Tramway Engineer and in some instances detailed projects have been prepared. A system of a total length of about 200 miles in the Lyallpur area costing Rs.56,00,000 has been projected in detail and its construction has been recommended to the Local Government. Possibly funds will be arranged for this in the Provincial Development Loan.

In 1923, Sir Ganga Ram had the honour of being the first Non-British to be elected as President of the Congress. In his address before the 1924 Session he remarked:

Your Excellency and Gentlemen. It was not small surprise to me last year when I heard that I was elected President of the year, and, since it is the highest honour in a technical institution of this kind that can be conferred on a member and, I being so unworthy of it, I recognised all the more that you have treated me with a generous consideration which I highly appreciate.

In his most interesting address he further observed:

Gentlemen, I am a living record of half a century of the Public Works in the Punjab, as I joined in 1873. I could never have imagined that I would live to see the day when a coolie, then getting two annas and six pies per day would be earning twelve annas to one rupee a day, and a mason or carpenter then getting six to eight annas a day, would be earning two rupees four annas to two rupees eight annas a day. This is seemingly an index of prosperity, yet the working class are not getting proportionately richer, as the mode of their living has materially changed, prices of commodities have risen, and altogether there is a keener struggle for life, a necessary result of modern civilisation.

He narrated the story of his post-retirement occupation with lift irrigation and said:

Having strengthened my conviction that my knowledge of engineering ought to help me, I came into the field, and afforded to solve the problem in right earnest. This led to a grant of 50 squares, which later on expanded to 100 and so on and so on. Opportunities after opportunities came in my way till "cusecs" "lift", "Power" became my household terms, and I deduced simple formula for solving in the jungle any factor out of the four I have indicated, and if you, gentlemen will, take pencil and paper and jot down a few simple rules, you will find that you will be able to solve mentally several problems of lift irrigation for agriculture:

- (a) For centrifugal pumps.

$$\text{Discharge in cusecs} = \frac{d^2}{18},$$

for instance, a 12-inches pump will

$$\text{give } \frac{12^2}{18} = 8 \text{ cusecs}$$

- (b) Power required in lifting water =

$$\text{Discharge} \times \text{height of lift} \times 2/9.$$

This is based on an efficiency of 50 per cent.

- (c) Cusecs x height = Horse power obtainable. The denomination 15 is a safe practical figure; in theory it is 8 and Mear's figure was 11, but the cautious figures is 15.

During his year in office the Membership of the Congress was thrown open to engineers passing the following qualifications:

- (a) Degree or Diploma from a recognised University.
- (b) Diploma from the Roorkee College.
- (c) Membership of the Institution of Civil Engineers.
- (d) Membership of the Institution of Municipal and County Engineers, London.

By 1930, the Congress had firmly established itself. In fact it was flourishing. The increase in Membership is shown in the following Table:-

1912	92
1913	189
1920	220
1925	307
1930	415

The finances were declared to be in "healthy condition" as the balance stood at Rs.13,845/8/9. Its proceedings were being sent all over the world and were in considerable demand.

The President of the 18th Congress Mr. W.S. Dorman referred to this advancing maturity and said:

The thought that this is our eighteenth Congress engenders feelings akin to those, of the high minded youth, who, leaving school full of great and noble ideals and reliant on himself, is determined to make the world a better place than he finds it. Time may shatter some of his ideals and experience may show him that others are impracticable, but so long as he remains true of himself all will be well.

The subject of Mr. Dorman's address was the speeding up of communications. He wondered at the speed of 357.7 miles/hour attained by some Squadron Leader Orlebar on 12th September and then advocated the spiritual values to match up the material progress. He said:

"But Gentlemen, I do not wish to end in a purely materialistic concept of progress, which appears to have found its supreme expression in that land of rash and hurry--the United States of America—and which is so far removed from that under-current of spiritual life which we like to associate with the East, and which I should like to see reflected more in our work. Sir Benjamin Brodie, addressing the Royal Society in 1859, said that physical investigation more than anything besides, helped to teach us the actual value and right use of imagination, which, if properly controlled by experience and reflection, became the noblest of men, the source of poetic genius and the instrument of discovery in science.

In his speech as a Chief Guest Sir Fazl-i-Hussain said:

The Engineering Congress has now become an annual institution in the intellectual activities of the province, and there can be no two opinions about the very great utility of the institution. It is making most valuable contribution to engineering knowledge and research.

The depreciation years of 1930's were to have effect on the Congress membership as well. Between 1931 and 1935 the Membership fell down from 432 to 372.

The all round financial stringency got reflected in the addresses of this period. His Excellency, Sir G.F. De Montgomery, Governor of the Punjab in his inaugural address in 1931 remarked:

"for it is in the inevitableness of the present all prevailing financial stringency that many projects of great public utility and technical interest must be deferred, and many investigations of the highest importance must be curtailed or suspended for some time to come; but this depressing thought in its turn induces another line of thought, which can, in my view, be pursued with some advantage at a Congress of Engineers, representing many different administrations, departments and interests. The problem for want of a better name, I may describe as the possibility of a closer concatenation of engineering effort in the public interest.

In 1932, Sardar Sikandar Hayat Khan, at that time member for Revenue was the Chief Guest. In his address in the context of overall depression he sounded a note of warning to the Punjab economy due to the construction of Sukkur Barrage. Though later found unrealistic, it is interesting to read;

"The other matter which is equally compelling and needs immediate attention is the impending competition from Sindh which we will have to face in the near future. It is claimed that the Sukkur Barrage Scheme will bring under cultivation 5i million acres in Sindh and Khairpur. It is not difficult to visualize the result of this enormous accretion to the already large acreage under wheat and cotton in this and the other provinces. The question is how are we to meet or at least to minimise the conceivable effect of this competition from a tract which has a considerable advantage over us due to its closer proximity to the port of Karachi which has hitherto been handling almost exclusively the exportation of Punjab produce.

The under current of depression continued to mark the address of Congress. In 1933 Dr. Gokal Chand Narang concluded his address by saying:

"Before I close, I must say a word of sympathy to those engineers who without much fault of theirs, have fallen a victim to the axe of retrenchment and some of whom may not even be present here. They should not lose heart. Government service is not the only avocation in life and there is a world elsewhere as well. Men of ability and grit will not starve. It is for them to combine and join their heads to discover some avenue of useful pursuit. Private practice in engineering may be a novelty in the Punjab but it is not so in other parts of the world and what is possible elsewhere can and ought to be made possible in this Province. Then there is the great and yet almost untrodden field of industry. India is at a primitive stage of industrial development and engineers with initiative, grit and energy can pool their resources and set-up moderate-sized foundries and other engineering works and induce capitalists to start factories and mills of every kind which will not only solve the problem of their unemployment but would also render a real service to their country.

His address was further characterised by poetic expression of the achievement of engineers:

"If I had defined the functions of engineers as mentioned in the Charter, I would have added the creation of beauty as well. When I look at a beautiful building it strikes me as a work of art, in fact, a piece of poetry written in brick and mortar, stone and cement, its arches, curves cupolas and turrets, its architrave, friezes, cornices and other entablature representing, as it were, the letters of an artist's alphabet, its majesty of

design viewing with the majestic flow of the mighty lines of Marlowe and Milton and its symmetry of structure reminding one of the balance of the many storeyed Spenserian stanza.

In 1934, for the first time, Indian gentlemen were permitted to wear non-European dress as defined in the Punjab Code at the Congress Dinner. It was also during this year that the visits by train to engineering works were given up till more prosperous times.

In 1937 came the provincial autonomy and greater association of Public representatives with administration. This year the president of Congress Mr. J.D.H. Bedford added another dimension to the role of Congress by high-lighting;

"We are on the threshold of big constitutional changes in the form of Government, and every year it is becoming more important that an engineer should be able to state his facts, reasons and conclusions in such a way that a non-technical man who is to provide the funds for him, can follow them clearly. His arguments should be as convincing to the layman as they are sound from technical considerations. This ability to argue and convince is best attained by public discussions, and I hope that the young engineers particularly will take full advantage of the facilities afforded by the Congress platform, at the same time remembering that the time at our disposal is short.

The first twenty-five years of the Congress proved to be an outstanding success. In 1938, R.B. Bawa Natha Singh, observed during his presidential address:

This Congress was founded in 1912 and this is its 25th or Jubilee Session. For several years before the Congress was started, a strong need had been felt for an Association, where men engaged in the profession of engineering could meet periodically and pool their knowledge and exchange views on the difficult problems facing them in the course of their daily duties. The objects with which the Congress was started are set forth in the memorandum in the following words:

- (a) To promote the science and practice of engineering.
- (b) To afford its members an opportunity for meeting at least once a year to discuss matters of engineering interest and to enjoy social intercourse.

That these objects have been fully realized will be at once clear from the 25 volumes of literature issued by the Congress since its inception dealing with some of the most intricate problems of engineering. A great stimulus has also been given during this period to experiment and research by the foundation of the Irrigation Research Institute in Lahore on the recommendation of this Congress. This Congress was the first of its kind in this country and is in a way the mother of all other Engineering Congresses and Associations in India. Both in point of attendance at meetings and the quality and volume of literature produced, it has maintained its superiority over all of them. Our membership which stood at 92, twenty five years ago, stands at 372 this year, an increase of 280 members which is a clear index of the popularity and usefulness of this institution.

Records of the Congress indicate that after Mr. Dorman the officer who put in a great amount of work into the activities of the Congress was late Mr. D.A. Howell. Throughout his stay in the service of the Punjab he worked in the Committee continuously volunteering himself for many tasks, from parking of the cars at the time of annual functions to holding office of the President in the year 1938-39.

By the passage of time the Congress has become the mouthpiece of profession and the presidential pronouncements started encompassing the status of engineer itself as against the engineering works. Mr. R. Trevor Jones in 1941 remarked:

Where does the engineer fail to-day? A friend of mine, discussing professions, claimed that the term should not be applied to the engineer. He said "Look at your Dictionary and see the meaning of the word "Profession." I looked and one of them is: "an employment not mechanical and requiring some degree of learning. Although this was meant in fun, may be it has a message for us. Is the efficient engineer liable to become too mechanical in mentality, too rigid in his outlook, too hide-bound by this educational technique and theoretical standards? This is possibly a danger and one to be guarded against. He can lose what is known as his common sense, his power of judging problems from the accepted facts of things. It may be that the engineer's advice in future will be required in many matters which are not necessarily technical or professional.

In 1944 Sir Arthur Griffin K.T.O.B.E. was President. The subject of his speech was a "survey of the various engineering developments and problems on Railways". He reviewed the modern trends of design in railway track, the forces to which a locomotive is subject when running on track, improvement in sleeper design, bridge design and role of welding in it.

Sir Bertrand James Glancy Governor of the Punjab was Chief Guest. In his reply to presidential address he said:

One item of information that Sir Arthur has given us has caused me no little disquietude—and that is his account of the strange variety of ways in which a railway-engine is capable of misconducting itself. It appears that even the best constructed and most perfectly behaved engine is obsessed by an incurable hunting instinct—romantic perhaps but nonetheless alarming. Like many others my highest ambition in my earliest youth was to rise to the position of an engine-driver. So far as I am concerned the last traces of this ambition have been finally dispelled. Those who would aspire to this calling require, I now realise, a quite unusual degree of resolution and gallantry; they must be prepared to force their uneasy iron hunters, snorting from flange trouble, over a flexible and elastic track in what may be described as a continuous "points to points" race from one end of the country to the other. So adventurous a career is beyond the endurance of the ordinary citizen.

Pakistan came into being in 1947. The upheaval was indeed great and the activities of Congress remained suspended for sometime.

A meeting was called on 2nd April 1949 by Dr. M. Ishaq at his residence. No.21 Cooper Road, Lahore, with a view to "reviving the Punjab Engineering Congress or a similar Body to deal with the future Applied Sciences development of Western Pakistan." The meeting was attended by the Chief Engineers of Irrigation, Buildings & Roads and Electricity and other engineers from these Departments. It was also attended by some outside engineers and officers from the Department of Industry. After obtaining legal advice it was decided that it would be proper and fit to call the Annual General Meeting of the Punjab Engineering Congress and to hold election of the office-bearers and to take steps to acquire the assets of the Punjab Engineering Congress.

The first Annual Meeting in Pakistan was held in the Committee Room of the P.W.D. Secretariat at 9 a.m. on 4th of June 1949. Mr. S.I. Mahboob, Chief Engineer, Irrigation, was in Chair. Mr. M.A. Hamid was elected President, Messrs. S.I. Mahboob and S.M. Hasan were elected Vice-Presidents and Mr. A.M. Malik Secretary. A Membership recruitment drive was launched. In the general letters issued to all the members of the Congress, it was stated that:

You know that the Punjab Engineering Congress is again in action now. Consequent upon the migration of Non-Muslim Engineer Officers to East Punjab, the number of Members has decreased considerably. It is now desired that all the Gazetted Engineer Officers of the P.W.D. Irrigation Branch, Electricity, Railway and M.E.S. may be invited to join the body immediately.

The Congress intends to keep its traditions of the past and in this connection it is proposed to hold the next Annual General Meeting in December, 1949. Technical Papers will be read in this Session and all usual facilities will be provided to the Members. Exact date of the meeting will be advertised in the Newspapers.

The Membership which was 93 in 1950 rose to 130 at the end of the same year and shot up to 231 in 1951.

The first session after Independence could only be held in 1951. K.B. Muhammad Abdul Hamid was the President and Sardar Abdur Rab Nishtar, Governor of the Punjab was the Chief Guest. The engineers by this time had come under maximum strain to lose the positions of administrative responsibility and were reduced to mere technicians. In his presidential address Mr. Hamid developed the case of engineers and said:

The public and the politicians have yet to learn that by encouragement the Engineer like other human-being can be made to deliver the goods and put in any amount of hard work. Under favourable circumstances the Engineer's initiatives become alive and progressive. A sense of frustration kills every progressive element in the make up of the Engineer's mind. The development of the country depends mostly, if not wholly, on the Engineer. The Public and politicians would do well to study how to create circumstances to get the best out of the Engineers. On the other hand, the Engineer should go all out to prove to the public and the politicians his worth against all odds. It was in 1943 that the then President of the Punjab Engineering Congress, Sir, William Roberts brought forth in his presidential address the claims and suitability of Engineers for administrative posts. In 1946, Sir Henry Craik the then Governor of the Punjab, while opening the Congress Session, made the following remarks:-

It is the misfortune or perhaps the good fortune of engineers to remain for the most part anonymous. The achievements are corporate, rather than individual. Save for a few who have distinguished themselves as designers of military fortifications there are perhaps not more than a dozen engineers whose names are famous throughout the world. Though the works of the Engineer defy (or should defy) the ravages of time and stand often as the most indestructible monuments of human achievement, yet the men whose genius reared them leave little trace of their identity. We do not know whose mind conceived the geometrical exactitude of the Pyramids, nor whose skill and knowledge perfected the Roman roads and aqueducts. And this lack of any record of the individual engineer may perhaps make us forget that in engineering, as in other fields of human endeavour, progress, or indeed the avoidance of retrogression, depends on a continuous supply of individual genius. For the Punjab whose present prosperity was founded by engineers and whose future progress depends no less upon them, it is a matter of vital concern that there should not only be a plentiful stream of qualified engineers of solid and respectable ability, but also in every generation one or two men with a spark of engineering genius distinguishing them from the rest.

The inaugural address of Sardar Abdur Rab Nishtar was most re-assuring. He said:

I am at one with Mr. Hamid that the administration should not confine to utilising the Engineering skill of our people only in P.W.D. Railway Engineering and similar

departments in which they have specialized. I mean that for almost every post if a technical man could be found he will be preferred over a non-technical man. That has been my policy. Last year I had to select a member for the Public Service Commission. According to the traditions of this Province, certain judicial officers were recommended and being a Governor I thought I had to follow the custom and precedents, in the Province, but the moment I came to know that a technical man was available I jumped at the opportunity and appointed him in preference to the non-technical men who had very great backing. It was because of this reason that I have put in on the file that for such cases a technical man should have preference over a non-technical man. Therefore, I hope Mr. Hamid would not have and should not have any confusion on this point. He knows it well that matters whether they relate to industry or any other section I used to invite him and some of his colleagues for their advice.

As it was pointed out by Mr. Hamid in his address, for the success of the members of the Public Services, it is absolutely essential to secure the co-operation of the public and this co-operation of the public you can attain only when you deal with them squarely and fairly. When you approach them in a spirit of public servant, you should be sympathetic. I hope that in times to come the politicians who take charge of administration and the members of the public services will realize their respective positions, and perform their duties in a way that will give greater satisfaction. I hope that our Engineers will be the foremost in this respect. I wish you every success in your deliberations. Your individual efforts in the past have resulted in remarkable results. Now that you have assembled together to discuss matters between yourselves I hope that your collective efforts will yield still better results.

1954 was a year of special significance in as much as suggestions were made in the meetings of the Council for starting a journal of the Congress, for having a Symposium at the Annual Session and to have a building for housing the Headquarters of the Congress. The membership by the time has risen to 369.

In 1955 came that momentous political decision to unify all the provinces into a single province of West Pakistan. In its wake came integration of services. The Punjab Engineering Congress was replaced by West Pakistan Engineering Congress and opened its doors to members of engineering services of all the provinces.

The decision of the council to hold symposium at the annual session materialized for the first time in 1957 when the subject for symposium was selected to be "Housing Problem in West Pakistan". Since then the symposium is the regular feature of the annual session.

The quarterly journal of the Congress "Engineering News" is being regularly published.

In 1963 Congress completed its fifty years of fruitful service to the nation. By then it had produced forty seven volumes of proceedings containing 362 technical papers and seven volumes of symposia on topics as divergent as "Water-logging and Salinity" Engineering Education, and "Floods" etc. That year registered another land-mark. P.W.D. had completed 100 years of its inception. The Congress was proud to bring out a Publication highlighting the achievements of P.W.D. during all those 100 years a Golden Jubilee Publication containing very informative articles by eminent engineers. The other publications were usual volumes of Proceedings and Symposium on "Water-logging and Salinity in West Pakistan". The Membership of Engineering Congress had by then risen to 900. Recounting to the achievements of the Engineering Departments in his Address of Welcome, during the 47th session held on 7th October 1963 in the Punjab University Hall, the President Engr. A. Rashid Qazi S.Q.A. reminded the Engineers to rededicate themselves for the service of the fellow men and the nation in the following words: -

"Brother Engineers, we who have chosen this creative profession to mould and master the forces of nature, have a duty to strive for a better living for our fellowmen. Let not spells of weariness and dejection cloud our vision or impair our capacity to meet the ever-mounting obligations., We must stand up to our responsibilities and be counted now if we are to lay any claim to the plaudits for the one hundred years of engineered progress.

The very word "profession" has a religious almost reverent connotation and must reflect our faith in whatever we profess. As Engineers, we must display integrity, both technical and otherwise, follow strict codes, and give credit for achievements to the right persons. There has to be the element of dedication and a conscious determination to serve and survive, breaking away from dangerous ruts. The Engineer building the Panama Canal once expressed that the only difference between a rut and a grave is that the grave is shorter and deeper.

To the young friends in the engineering profession, I may avail of this opportunity to express that education does not finish with their graduation. In fact it starts from there. There has to be a relentless pursuit if one is to make his mark not only in his personal career but in the history of our developing nation.

The fifty years old motto of the Congress "Prosperity and Progress" can best be kept aloft by re-dedicating ourselves to the service of our fellowmen and as we build well we shall also be serving God."

Field Marshal Muhammad Ayoob Khan was the Chief Guest during the Golden Jubilee Session of 1963.

1964 passed without annual session and the next 48th session was held on 17th March, 1965, under the Presidentship of Chaudhry A. Hamid. The Executive Council made concerted efforts that year to purchase a piece of land for construction of a building of the Engineering Congress which bore fruit later and before the close of the year a plot measuring 8 Kanals and 12 Marlas was purchased from Lahore Development Authority at Liberty Market Gulberg-III, for Rs.79,368/-. The land was, however, transferred to the Engineering Congress in 1972. The other feather in the cap of the Executive Council was that case was moved with the Government to set up an Engineering Academy which was later to materialise in the shape of Punjab Engineering Academy at Niaz Beg as it now stands. The Membership had by then risen to 1021 which bespoke of the popularity the Congress had by then nurtured. Not oblivious of the deprivations of the Engineering Community and conscious too of their obligations Engr. Ch.A. Hamid in his Presidential Address on 17th March 1965 spoke:-

"As for the status of the engineer viz-a-viz other services, the matter obviously requires a very careful and considered treatment. The steps that may be taken in this connection have to be commensurate with the role the Engineer is playing in the building of the nation. We would, therefore, earnestly appeal to those in authority to take a dispassionate view of the situation so that this important national heritage i.e. the body of Engineers is nursed with understanding and appreciative hands and instead of being left to degenerate in an atmosphere of dissatisfaction and dejection is allowed to develop, flourish and add to the strength of the country shoulder to shoulder with all others working towards the same objective."

"While on the one hand they should, with proper decorum and methods, pursue the attainment of what they believe are their rights, on the other they should faithfully carry out an appraisal of themselves. If they discover any weakness in their ranks let them first own them and then go all out to eradicate them. There is nothing dishonourable in an

effort at self-correction. It is gratifying to observe signs of awakening to the necessity of following and adhering to certain ethics.

There can be no doubt that the observance of a well defined code of behaviour and attitude is most essential for upholding the prestige of the profession. We have ourselves to evolve such a code for our urgent and serious attention. I hope the Congress in its future deliberations will deal with this important aspect of engineer's responsibility more thoroughly."

The 49th Annual Session of the Congress was held on 17th October, 1966 under the presidentship of Engr. A.M. Akhoond, Chairman Railway Board. Member WAPDA (Power) Dr. M.A. Hamid S. Amt. was the guest of honour. In his Address of Welcome the President of Engineering Congress recounted the commendable role of Engineers engaged in all Disciplines, may it be B.R.B.D Canal or Irrigation Department, vital Industries or essential services like the Railways, during the onslaught of Indian invasion in the war of 1965. They kept wheels of every vital entity moving quite effectively and dauntlessly. The President observed:

In pursuance of the recommendations made from the platform of the Congress in the recent past, a full-fledged University of Engineering & Technology set up at Lahore has been doing excellent work over the last few years. It is gratifying to observe that apart from the Under Graduate courses in Civil, Mechanical, Electrical, Mining, Architecture, Town Planning, Chemical and Metallurgical Engineering, the University has started Post-Graduate courses leading to Master's Degree in Public Health, Town Planning, Soil Mechanics, Foundation Engineering, Structural, Hydraulic and Irrigation, Electrical and Production Engineering.

During this session Railways were embarking on construction of a vital alternative link between North and the South linking Kot Adu with Kashmore passing over Taunsa Barrage. The first leg under construction under this project was 50 miles long broad guage link between Kot Adu and Dera Ghazi Khan. Who knew then that in the crucial 1971 war with India this route would pass the entire traffic of Multan-Karachi main line when this route was incapacitated by enemy homling. During this session conversion of metre gauge track between Hyderabad and Mirpur Khas was also under way. To release traffic pressure in Karachi which was mounting with the every day that passed, Railways also undertook construction of a circular Railway. To meet with ever increasing demand of Railway sleepers which was a cost effective impart item and that of the carriages, the Railways were installing a prestressed concrete sleeper factory at Sukkur and had planned to construct a carriage factory at Islamabad.

WAPDA did not lag behind either works on the construction of Hub Dam, Khanpur Dam, Gomal Dam and Tanda Dam, kept appreciable pace. Monumental WAPDA House as it stands on the Mall, today too was under construction. On the Irrigation side Trimmu-Sidhnai-Mailsi-Bahawal link system had since been completed and was working satisfactorily. Works comprising Mangla Dam, Rasul-Qadirabad-Balloki-Sulemanki link systems and Marala Barrage were in various stages of completion. On Power side WAPDA had installed two transportable gas turbines, aggregating 24,000 KW at Lahore. Thermal station of 25,000 KW capacity was completed at Sukkur and Hyderabad thermal station was extended by 8,000 KWs.

The 50th Annual Session of the Congress was held on February 23, 1968 under the presidentship of Engr. M. A. Waheed P.S.E.I, when the Chief Guest for the inaugural session was General Muhammad Moosa Governor, West Pakistan. The membership of the Congress

was reported to be over 1200. The need for an in-service training facility in the form of an Engineering Academy was reiterated. Stress was also laid for the absorption of 500 temporary Engineers against permanent vacancies and for development of Pakistani Consultants. Irrigation Department reportedly planned to provide additional 22 lac acre-feet of irrigation water from the ground water reservoir by 1970. This was to be achieved by sinking about 3000 tubewells at a cost of Rs.80 lacs.

Construction of 50 miles broad gauge rail line from Kot Adu to Dera Ghazi Khan passing over Taunsa Barrage progressed steadily for scheduled completion by June, 1968. Conversion of 40 miles long metre gauge section between Hyderabad and Mirpur Khas to broad gauge having been completed the section was opened to traffic on 17th October, 1967. A modern factory for the manufacture of prestressed concrete sleepers went into production in Sukkur. Work on the electrification of Khanewal - Lahore section, a length of 178 miles, was taken in hand.

A significant change in October 1967 was the bifurcation of the Buildings and Highways Department as two separate units. Some major river bridges were designed and/or constructed by Pakistani engineers during sixties, such as reconstruction of old Ravi Bridge, Chicha Watni bridge over Ravi, Jehangira Bridge over Kabul River, Bridge over Jhelum River at Jhelum, new bridge over Ravi at Lahore and over Sutluj near Bahawalpur. Karachi-Hyderabad Super Highway entered the construction stage while the other important highways i.e. Lahore-Sheikhupura-Lyallpur, Sheikhupura-Sargodha-Khushab and Lahore-Multan were in advance stages of detailed design for starting construction before the close of 1968. Wapda continued with the implementation of Indus Basin Project, the largest engineering programme demanding Rs.9 crores monthly. Mangla Dam, Qadirabad Barrage and Qadirabad Balloki link were completed ahead of schedule while Rasul Barrage, Rasual Qadirabad Link and Marala Barrage reached advanced stages of completion. Wapda House, a commercial and technical breakthrough had recently been completed.

On power side an aggregate capacity of 2.66 lac Kws was added to Wapda main grid system. The annual generation of energy for entire system increased from 2900 million Kws to 3000 million Kws.

The 51st Annual Session was held on March 27, 1970 under the Presidentship of Sh. Ahmed Hasan S.Q.A. when the Chief Guest was Gen. Attiq-ur-Rehman, Governor Punjab. In his presidential address, Sh. Ahmed Hasan vehemently pleaded the cause of engaging local consultancy and contractual services. He said "Concerning the private sector, this forum has on past occasions drawn the attention of the Government to the need to encourage, promote and develop locally available consultancy and contractual services. It is increasingly felt by the members of this Congress that the foreign consultants do not, any more, have an edge over the local experts except in some very rare and sophisticated areas. This progressive self-reliance of the Pakistani engineers should be acknowledged and Pakistan firms should be increasingly engaged in national projects. The highest economic body in the Government viz. National Economic Council had taken a decision in May, 1964 that Planning Commission should, in consultation with Provinces, make a study of how to reduce our expenditure on foreign consultants and to what extent they can be replaced by our own consultants.

In the presence of this decision the Planning Commission constituted a high-powered working group headed by the Additional Chief Secretary, West Pakistan. The Congress awaits its outcome with considerable anxiety".

Little wonder the present day consultancy services of National and International standing are the direct fruits of the efforts of the Engineering Congress.

The Engineering Congress did not fall in its obligations of pleading the cause of in-service engineers in respect of their service matters. Spoke the President of the Congress thus:

"In West Pakistan a large number of Engineers still continue to hold positions as Temporary Engineers, some of these for the last twenty (20) years. The rectification of such a position needs an immediate decision by the Government. In December, 1966, as Secretary Irrigation and Power, I had submitted proposals for conversion of such temporary posts into permanent ones which had continued for more than 5 years and for which there was no possibility of being closed down in the near future. No decision has been taken by the Government on this case for the last over three (3) years. On behalf of the Engineering Congress, I would request the Governor for an early decision in this matter not only with regard to the Irrigation Department but all the other Engineering Services."

Recounting the achievements of various Engineering Departments the President said:

"The Kot Adu-Dera Chazi Khan railway link has already been opened to traffic. Work to link Dera Ghazi Khan with Kashmor is in progress and would be 40 per cent complete during the current year. Electrification of Lahore-Khanewal Section has been somewhat delayed, and the project will be completed during the year 1969-70. Work on the carriage factory at Islamabad is in advanced stage and about 80 per cent is expected to be completed during this year. The Railways are making continuous efforts to boost up productivity and profitability, and increase the facilities for passengers."

Several components of Indus Basin Project have been completed during the past two years. The Rasul Barrage, Rasul-Qadirabad Link Canal, Marala Barrage, Balloki-Sulemanki II Link Canal and Pakpattan-Islam Link Canal were completed ahead of schedule. The Mangla Reservoir was filled to its conservation level successfully for the second consecutive year. Now all works of the Indus Basin Project East of Jhelum river have been completed and the conserved water of Mangla Reservoir and the waters of the Jhelum and Chenab can be transferred to the Eastern river canals. The contract for Civil Engineering Works of Tarbela Dam has been awarded. This is the largest single Civil Engineering Contract awarded anywhere in the world so far. Works on Chashma Barrage and two Indus link canals i.e. Chashma-Jhelum and Taunsa-Punjnad has progressed satisfactorily.

Karachi - Hyderabad super Highway was during this session.

In addition, there had been a large scale activity in the improvement of the existing road system and provision of new roads to connect the far-flung areas of West Pakistan. RCD Highway connecting Karachi to the Iranian border via Lasbela-Khuzdar-Kalat-Quetta and Nushki is of particular significance on which work is in progress.

The 52nd Annual Session was held on 8th April, 1971 under the Presidentship of Mian Alim-ud-Din S.Q.A., SK, P.S.E. when the Chief Guest was Lt. Gen. Attiq-ur-Rehman, Governor Punjab.

Living upto its objectives the Engineering Congress, besides promoting Engineering profession and skills through presentation of technical papers presented and discussed at the annual proceedings and symposia, never failed to plead the cause of engineers. It was in consideration of such pleadings that the Provincial Government removed a long standing class disparity that existed between graduate Engineers and granted class-1 to all graduate engineers. Mian Alimuddin, SOA, SK, President Pakistan Engineering Congress in his Presidential Address on 8th April, 1971 while acknowledging the gracious action of the Government in this regard Co-

axed the Engineers to acquit themselves of their obligation. He said "Now that the Government has graciously recognised the justification for granting Class-I to all graduate Engineers, it should legitimately expect that the public shall be provided with much better dispensation of service than what it has been receiving so far. The ethics of working among the Engineers should have a marked change for the good.

The Government and the public will be judging them by their own standards. Let us come up to their expectations and earn respect in true sense of the term."

The 53rd Session was held on 28th December, 1972 Mr. I.A.S. Bokhari was the President and Mr. Nurul Amin, Vice President of Pakistan was the Chief Guest. End of 1971 had seen the sad political dismemberment of the country. There was then atmosphere of general gloom. Yet the Engineers did not relent they continued their duties to the nation. Not only did they kept the Essential Services in normal order in all walks of life but also notwithstanding heavy strain on the economy of Pakistan. The works on the Indus Basin projects continued unabated the abandoned area of the Bahawalpur State continued to receive the attention of the Irrigation Department. WAPDA had by then raised its installed power generating capacity from 200 Mw in 1959 to about 1800 Mw by then. To derive full socio-economic benefits from over all development of the country construction of new roads and Highway had been taken in hand. Bridges at Sangjari, Bhai Khan and Dina had been completed on the G.T. Road between Lalamusa and Attock. Construction of more Bridges such as one near Wazirabad, one new bridge at Sahiwal and redecking of one near Muzaffargarh was in hand. In the case of Railways Kot Adu - Dera Ghazi Khan line had since been extended to Kashmore and remained operative as a main alternative artery during 1971 war. Facilities of Diesel locomotives repair shops were expanded to cater for 300 locomotives. Engineering Congress on its part continued to advocate the cause of setting up Punjab Engineering Academy and also pleaded the case of unemployed Engineers. It also pursued its case of getting the plot of hand registered in the name of Pakistan Engineering where a building of its own could be constructed. During this session a very useful Seminar on 'Engineer and Solution of Economic problems of Pakistan, was arranged on 20th October, 1971.

The 54th Annual Session was held on 31st October, 1974 under the Presidentship of Mr. Sayyid Hamid when the Chief Guest for the inaugural session was Ch. Fazal Elahi, President of Pakistan. By this time the Congress had expanded its scope of activities by starting technical lectures on important topics at its forum and by arranging mid-term Seminars. In his address of welcome the Congress President pleaded that it was becoming increasingly difficult to bear the necessary expenses for fulfilment of the objectives of the Congress. It was suggested to enhance the annual subscription fee of the members which might be a burden for the junior members. The President, therefore, proposed that the fees of inservice engineers be reimbursed by the Government.

In this very Presidential Address the President drew the attention of the Government for the creation of the council of Engineers thus:

"The Government has been making efforts to improve the administration and the social order. I, on behalf of the Engineering Congress and the Engineering profession assure the Government, Sir, that we sincerely wish to assist them in creating a new order of Islamic values in the moral and socio-economic structure in Pakistan. Engineers, therefore, have already proposed that a Council of Engineering Profession be constituted by the Government to regulate the conduct, practice and profession of

engineering and to promote healthy and ethical values amongst the engineers. A draft ordinance was submitted to the Government sometime back for creation of the council of engineers and we hope it will receive a very early attention. During this session the country had to face floods of unprecedented magnitude in August 1973. These floods devastated many parts of the country and resulted in colossal damages to Canal Headworks, irrigation and flood protection works, road, bridges, and railways. In order to deliberate on and suggest some remedial measure to mitigate the flood problems the Congress held a special seminar on "Floods of 1973" on 2nd December 1973. Another calamity also befell in 1974 in the form of an unfortunate mishap at Tarbela Dam. Stored water, more than 6 MAH, had to be released and wasted to sea to save the Dam.

Attention was also drawn to the dire need for a decision on the apportionment of river waters amongst the provinces. In the absence of this decision some important projects, such as Chashma Right Bank Canal, Greater Thai Project, Dajal Canal extension, Jalalpur Canal and Tarbela Left Bank Canal, were being delayed. National Engineering Services of Pakistan (Ltd.) was also created during this very session and the President specially lauded the achievements of this organization during its life of only one year.

The 55th Annual Session was held on 22nd December, 1976 under the Presidentship of Dr. Mubashir Hasan. Prime Minister Zulfikar Ali Bhutto was the Chief Guest. In his Address of Welcome the President eulogized the activities of the Pakistan Engineering Congress and its achievements. Proudly he claimed that state owned engineers in firms had shown considerable originality and initiative and in open international competition had bid and won several big contracts abroad. These firms expected a profit of more than one hundred Crores in foreign currency on completion of the works in their hands. At-home design work of fifth tunnel at Tarbela was entirely done by Pakistani engineers.

In 1976 the then President, Dr. Mubashir Hasan instituted a Gold Medal after his name to be awarded to the author of the best paper read at the Annual Symposium. In creating this medal he was conscious that for honouring authors of best technical papers presented at the annual proceedings three medals viz Congress Medal, Kennedy Medal and PIDC Medal had already existed and there was need to encourage authors of papers presented at the symposia. This medal alongwith others has inspired talented engineers/scientists to come forward with their valuable write-ups.

The 56th Annual session was held on 4th May, 1978. Syed Muhammad Ayoob was the President. Chief of Army Staff and Chief Martial Law Administrator Gen. Muhammad Zia-ul-Haq was the Chief Guest. In his Address of Welcome, the President recounted the objectives of the Pakistan Engineering Congress and asserted that Engineering Congress had been instrumental in disseminating Engineering knowledge to an extent that led to the formulation of new concepts for the irrigation systems. The President advocated the necessity to raise generating capacity of WAPDA with a view to meeting with the ever increasing demands of the country. He also laid emphasis on expanding the means of communications more particularly in the Railways where there little headway had been made. He also pleaded for need to encourage local consultancy. A Seminar on National Production was held on 17th March, 1978.

At the 57th Annual Session held on 2nd December, 1980 under the Presidentship of Mr. Ashfaq Hasan, Lt. Gen. Ghulam Jilani, Governor Punjab was to be the Chief Guest who,

however, could not make it due to some emergency. He was deputed by a Provincial Minister & his inaugural speech was played on the Video Cassette before the audience. Breaking away from the tradition of highlighting the outstanding achievements of the Engineering departments the President in his Address of Welcome said:

I will only remain content to remark that if Pakistan has made any progress in the field of Agriculture, Industry, Communications, Oil, Gas, Electricity, Water, Health, Education, Urban/Rural Development, Atomic Energy or Defence Production, the Engineers always have had a direct or indirect contribution in fulfilment of every modern need of the Society or the individual. But, unfortunately, Engineers are not even 'mentioned in despatches' while eulogizing the performance of other Sectors, leave alone encouraging the Engineers. This trend has had a severe disheartening effect on the Engineering Profession in the country. I, sincerely appeal to you Sir, and through you to the Press & the Information media check and redirect this trend in the right direction to encourage engineers who are the real Nation Builders.

On speaking about the quality of works he said:

The Engineers are most concerned and perturbed over the present deteriorating standard of construction but are unable to arrest this trend as it is beyond their control. The first essential in quality construction is the availability of quality materials over which there is no control in Pakistan. In fact, the standards and testing procedures for quality materials have not yet been prescribed in Pakistan. The result is that substandard, inferior and often fictitious materials are sold in the open market and because of low price, they attract every prospective buyer. The present day need is to enact and enforce a Building Material Act on the lines of Pure Food Act.

He dwelt on the subject of Engineering Account and Audit and said:

The second important problem agitating the minds of Engineers is the maintenance of accounts. Although the Engineers receive professional education in engineering science in the Colleges but they are burdened with account-keeping during their service. When a young Engineer realizes that a minor irregularity in Accounts or cash book can be detrimental to his survival or promotion, he devotes more time to the account-keeping instead of professional work of Engineering. Although Government has provided a Divisional Accountant in each works Division but he is considered as Financial Advisor under the old Codal rules while the real responsibility for accounts is thrust on the Engineers mainly because the Accountant also represents the Audit."

1978 marked a great land mark in the history of Pakistan Engineering Congress. Thanks to the good offices of Engr. Mazhar Ali, the Chairman State Cement Corporation of Pakistan an advance rent of Rs.27,51,058.00 for 3 years was provided to Pakistan Engineering Congress for completing ground and first floors of the Building after which SCCP would occupy as tenants. Fully air-conditioned first and second floors with built up area exclusive of baths and stairs etc. measuring 17,500 Sq.Ft. at a rent of Rs.4.25 per Sq.Ft. per month were occupied by them on October, 1978. Basement when completed was to be used for Congress Head Office.

The President Pakistan Engineering Congress. Engr. Ashfaq Hasan in his Presidential Address pleaded to the Chief guest that since Pakistan Engineering Congress was engaged voluntarily in promoting science and profession for the welfare of the country, the property tax levied by the taxation Department should be waived off. The Governor through a letter promised to help the Engineering Congress but the Taxation Department did not accede to the request. This year the efforts of the Pakistan Engineering Congress bore fruit and the long awaited Punjab Engineering Academy was established. Engineering Congress pursued the service matters of the Engineers and proposed a time scale of promotion from one grade to the other as under:

Grade 17 to grade 18 after 5 years, grade 18 to grade 19 after 8 years, grade 19 to *grade* 20 after 5 years, grade 20 to grade 21 after 5 years and *grade* 21 to grade 22 after 5 years.

The 58th Annual Session of the Congress was held on 16th April, 1983 when the President, for the 2nd term, was Engr. Syed Muhammad Ayoob. Engr. Elahi Bakhsh Soomro, Federal Minister for Industries was the Chief Guest. The president pointed out in his address of welcome that at the end of technical sessions it was customary to send a team of selected engineers for a visit to important engineering works. In this connection Pakistan Railways used to arrange a special train. However this year due to exhorbitant tariff imposed by the Railways a special train could not be arranged and alternative arrangements by air or road at such a short notice were not possible. It was informed that at the repeated demands of the Congress the Building of the "Punjab Engineering Academy" had been completed and a very senior and competent engineer, Mian Khalil-ur-Rehman, had been appointed as its first principal.

The President once again drew the attention of the Government towards ever-deteriorating standards of construction and reiterated the oft-voiced demand from the Congress forum of enforcing strict regulations and codes of ethics which should ensure provision of standard quality materials. He also pleaded to the Government for obviating the role of foreign consultants and contractors and for opening better chances of promotions for the engineers who were engaged in improving the lot of the common man.

The 59th Annual Session was held on 3rd April, 1984. Engr. Daud Beg was the President and Lt. Gen. Saeed Qadir Federal Minister for Production was guest of honour. In his presidential address, Engr. Daud Beg advocated the cause of engineers who were facing stringent promotion chances and proposed that they be provided Management grades on the similar lines as were being catered for engineers in the Ministry of Production. He also reiterated the need for introducing local consultancy services.

By then membership of Engineering Congress had grown appreciably and it was pleaded by engineers of different disciplines/organizations that they were not being given due representation in the Executive Council. It was, therefore, decided to revise Constitution and Bye-Laws of the Engineering Congress. A committee was set up for this purpose in 1983 and the revised and approved version was brought into force during that session. According to these Bye-laws the Presidents started to be elected in rotation from various disciplines mentioned in the Bye-laws according to the strength of their respective memberships. Seats of Vice Presidents and members were also increased according to the strength of the Congress Membership. Mid-term Seminar was held in November, 1983 at Rawalpindi where papers on Kara Kuram Highway and Naltar Hydro Power Project were presented. On the conclusion of the Seminar a group of sixty engineers was taken round the Highway and Northern Areas Projects which exercise proved to be very instructive and inspiring.

The 60th Annual session was held under the Presidentship of Engr. Masihullah Khan. Prime Minister Muhammad Khan Junejo was the Chief Guest.

In 1984 Congress Head Office with records was shifted to the basement of the Congress building where it is functioning very effectively. Request for telephonic connection was sent to the Telephone Department and the telephone was provided in 1987. During this Session Congress received a notice for the payment of wealth tax. A representation was sent to the President of Pakistan against levy of such a tax by Engr. Masihullah Khan President, Pakistan

Engineering Congress submitting that the Engineering Congress was voluntarily promoting profession and science for the overall national development and that on these grounds the said tax be waived off. No official decision has been communicated by the Income Tax Department in this regard upto the holding of the Diamond Jubilee Session. No further notice for payment of the tax for 1984 or for subsequent years has either been received.

During this session holding of monthly lectures by eminent national and international engineers got a good going and 7 very useful lectures were arranged. Now that number of technical papers presented at Annual Proceedings and Symposia had grown substantially high, it was becoming increasingly difficult to make a reference to any particular paper. A very useful subject index of technical papers was, therefore, arranged in alphabetical order separately in respect of Irrigation Channels, Water Logging, Buildings and Works, Bridges, Power, Water Supply, machinery and tubewell and miscellaneous topics. The papers presented at symposia have been tabulated at the end of this subject index booklet under respective symposia. The President of session, Engr. Masihullah Khan instituted a gold medal after his name to be awarded to the author of the best paper on 'Public Health Engineering'¹. Earlier widow of late Engr. Dr. S. M. H. Bokhari Ex-Member Wapda had instituted a gold medal to be awarded to the author of best paper presented on "Drainage".

The 61st Annual Session was held on 12th October, 1987. Engr. Mian Masud Akhtar was President and Prime Minister Muhammad Khan Junejo was the Chief Guest for the second session in running.

In 1985-86 activities of Pakistan Engineering Congress continued unabated. During the session M/s. PRC Chechhi of (USAID) approached the Executive Council for permission to reproduce selected papers on Irrigation. The permission was accorded by the Council and they reproduced about 40 selected papers in four attractive volumes bearing Congress monogram and name with the inscription of the sponsoring agency i.e. Government of Pakistan and U.S.A. M/s. PRC Chechhi donated fifty sets to the Congress and placed remaining sets in Irrigation Department Libraries of the provinces for the benefit of in-service engineers.

During the course of his inaugural speech on 12th October, 1987 Prime Minister of Pakistan Mr. Muhammad Khan Junejo appreciated the contribution of the Engineering Congress in furthering the knowledge of science. Seized with the exigency of numerous problems faced by the Engineering profession and engineers, the Prime Minister invited the Congress to indicate the issues and their viable solutions for consideration of the Government.

The Executive Council of the ensuing Session immediately on taking up the office appointed a special committee for the purpose which held several sittings and after long deliberations prepared and submitted a report to the Prime Minister for his consideration.

During the session M/s Dawood Hercules were visited by a delegation of Congress members on July 1986. The visit proved to be quite informative.

The 62nd Annual Session (1986-87) saw the memorable Diamond Jubilee year in the technically eventful and productive life of the Congress. It was held on December 12, 1987 under the Presidentship of **Engr. Abdus Salam. General Zia-ul-Haq**, President of Pakistan was the Chief Guest.