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Prime Minister's meeting with
Professor Abdus Salam

PRIME MINISTER

APRIL 1989

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THE RIGHT HONOURABLE
MRS. MARGARET THATCHER
PRIME MINISTER
DOWNING STREET
LONDON

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MY DEAR PRIME MINISTER

I AM DEEPLY APPRECIATIVE OF THE MEETING I HAD WITH YOU TOGETHER WITH MR. GEORGE GUISE AND THE AFFECTIONATE WAY IN WHICH I WAS RECEIVED. I WILL BE WRITING TO YOU IN MORE DETAIL ABOUT THE ISSUES YOU RAISED PARTICULARLY THAT OF BUREAUCRACY.

WITH MY WARMEST PERSONAL REGARDS.

ABDUS SALAM
DIRECTOR, INTERNATIONAL CENTRE FOR THEORETICAL PHYSICS, TRIESTE
PRESIDENT, THIRD WORLD ACADEMY OF SCIENCES
PRESIDENT, THIRD WORLD NETWORK OF SCIENTIFIC ORGANIZATIONS

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File 26

10 DOWNING STREET
LONDON SW1A 2AA

From the Private Secretary

16 May 1989

I understand from George Guise that Abdus Salam is seeing the Ambassador in Dacca very shortly. You might find it helpful to have a copy of the record of his meeting a few days ago with the Prime Minister, a copy of which I enclose.

Dominic Morris

Myles Wickstead Esq
Overseas Development Administration.

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MRMAAW

SUBJECT cc Mante



file

10 DOWNING STREET

LONDON SW1A 2AA

From the Private Secretary

8 May 1989

Dear Tom

PROFESSOR SALAM: TRIESTE INSTITUTE

As you know, Professor Abdus Salam who runs the Trieste Institute, was unable through ill health to attend the Nobel Prizewinners' Lunch last month. He was in town on Friday and the Prime Minister saw him for half an hour. Although he is obviously now frailer he still has all his faculties and a sharp mind.

He ran briefly over the work of the Trieste Institute. It had been established by the United Nations in 1960 to train scientists from the developing world, its concentration was on basic science. All the participants had to be employed and all post graduate. The courses lasted anything from one month to a year. Participants came with a background in a general subject matter, eg physics or electronics, and would then go into a workshop or seminar group for a particular area of research such as super-conductivity. Most of their funding was now received through the Italian Government (about 70 per cent). UNESCO and the Royal Society provide a small amount. Equipment had been donated through Italy, the United States and the United Kingdom. They had solved accommodation problems by taking over a nearby hotel on a permanent basis which provided 600 beds.

Applications by students were taken up to one year in advance, down to a minimum of one month ahead of a course starting. They were able to sift the prospective students fairly quickly on the basis of their track record, recommendations from their professors and word of mouth within the scientific community. Salam said he recognised there might be some lessons here for within the United Kingdom but by definition in the developing world Ph.Ds were fewer and further between, and word of mouth was a more effective screen. However there was a broad balance between students from the developing and developed worlds. Over the last twenty years they had taken more than 25,000 post-doctoral workers. Professor Salam believed that a mix of workers from the developing and developed world added significantly to Trieste's success. He confirmed that it was still possible to run it with only three full-time

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professional administrators but that as it had grown sufficiently larger they were having to think hard about whether they required one more.

The Prime Minister commented that we invested £900 million a year in basic science, excluding money through the universities, but we did not seem to get anything like the same intellectual pay-back pound for pound as Professor Salam was achieving at Trieste. There was also too much bureaucracy in the British Research Council establishments.

Professor Salam commented that he had tried to get something similar to Trieste off the ground at Imperial College but the site had not been ideal nor were there sufficient funds to develop it. The IRCs were a move in the right direction but morale in the scientific community was still low; some of the best of our young scientists were still heading for the United States and others were too willing to settle down to a good salary and lose the excitement of research and basic science. The Young Blood scheme had in his view been a success and worth repeating. We also needed to consider something along the lines of a Rhodes Scholarship for basic science with the developing world. The Prime Minister commented that she was very much in favour of exchanges of that sort but that we needed a stronger core with much less bureaucracy around which such exchanges could be based.

That part of the discussion ended with Professor Salam referring to his attempts to build three more Trieste-type centres: one in chemistry, both pure and applied; one on the environment and earth resources, and one on new materials and high technology. He would be lobbying on a forthcoming tour of the Indian Sub-Continent for their support for £200 million from the World Bank for these centres.

The discussion moved briefly on to the relatively low number of British Nobel Prizewinners. Professor Salam recognised the problem. They were like the Hollywood academics and were fiercely lobbied in the run-up to each annual ceremony. He had put Stephen Hawking forward and felt that there were three other strong candidates: Green, for his models to develop the string theory; Bell and Higgs, both at CERN.

Professor Salam felt that big science expenditure was distorting the overall science effort. We needed to separate out and ring fence a budget for small science. If we had decided to be in the international organisations like CERN, by all means try to run it cost-effectively but ring fence our commitment in a separate Foreign Ministry budget as other countries did. Exchange rate fluctuations would not then distort the rest of the science budget. The Prime Minister noted this point without comment.

The meeting concluded amicably with the Prime Minister reiterating her concern about the relatively high levels of bureaucracy in British Research Councils and the enormous amount of time it took to get anything done.

I am sending a copy of this letter to John Fairclough.

Yours ever

Dominic

DOMINIC MORRIS

Tom Jeffery, Esq.,
Department of Education and Science.

CCB-P

PRIME MINISTER

You are seeing Professor Abdus Salam tomorrow morning. He was unable to attend the Nobel Prize winners lunch through ill health.

In your folder is a note from George Guise. I doubt you will have time to read all the material he has included. Page one of George's note describes how Professor Salam won the Nobel Prize for his work in unifying the electro-magnetic and weak nuclear forces. Pages 3 and 4 set out a number of points you might like to discuss with Professor Salam. It is certainly worth drawing him on the lessons to be learnt from his very efficiently run Trieste centre by such flabby bodies as CERN. But you will want to keep Professor Salam off the idea of another Trieste type centre in Scotland which he floated in Edinburgh last month.



Dominic Morris

4 May 1989

MEETING WITH ABDUS SALAM

The Salam-Weinberg theory of the weak interaction is among the greatest intellectual break-throughs of modern times. The work follows the classical tradition of Faraday, Maxwell and Einstein. Salam's name will be remembered alongside theirs' in the history of science. In the nineteen fifties Salam explored the possibility that neutrinos produced when neutrons disintegrate as a result of the weak nuclear force always spin anticlockwise along their direction of travel. This was complete heresy because it had always been assumed that fundamental natural processes, such as neutron decay, would display left-right symmetry. One would therefore have expected to find, on average, as many clockwise as anticlockwise spinning neutinos.

From the simple but revolutionary idea, that nature is not symmetrical, Salam developed a mathematical description of the weak force which predicted that symmetry would be restored above a critical energy threshold. In this high energy domain the weak force would become mathematically identical with the familiar electromagnetic force responsible for electric and magnetic interactions. Salam gave this unified force the name "the electroweak force". Just as Maxwell demonstrated that the interaction of electricity and magnetism produced light, Salam and Weinberg showed that the propagation of the electroweak force would give rise to a heavy kind of light. The evidence for this was subsequently found at CERN culminating in the discovery of the W and Z bosons in 1983 by Carlo Rubbia's team. Salam was awarded the Nobel Prize in 1979 and Rubbia in 1984.

I have mentioned his scientific achievement in some detail because it is a key to the way he thinks about many issues.

He believes there is an ultimate unity in nature which will encompass the disparate physical forces of electro-magnetism, the weak and strong nuclear forces, and ultimately gravitation. He is a committed Muslim, his family having converted to Islam about the year 1200. He loves beauty and looks for it in his science. Indeed it was his surprise that nature appeared to be asymmetrical that led him to his great achievement. His Islamic heritage has also led him to reject the current fanaticism and violence so often associated with that religion.

Having left Cambridge with a double first in maths and physics and a PhD in theoretical physics, he became Professor of Mathematics at Lahore from 1951-54 and then returned to England. After a spell at Cambridge he founded the theoretical physics department at Imperial College, London in 1957. The early 50s in Pakistan were a period of tremendous loneliness for him because of isolation from his intellectual peers. His main crusade in recent years has been the bringing together of top brains from developing countries so that scientific understanding is disseminated.

He believes that it is far better to disseminate basic science in the Third World than to send out technology in black boxes. He argues that technology will evolve from understanding and that once that process is established it will self-perpetuate. With that goal he founded the International Centre for Theoretical Physics at Trieste in 1964 with finance from the Italian government. This Centre has concentrated on top calibre scientists from poor countries.

Between 1970 and 1986 the Centre received 3,500 post doctoral workers from Africa and the Middle East, 4,000 from Asia, 1,800 from Latin America and 2,700 from Eastern Europe.

Attendance from North America and Western Europe is also high and over 11,000 attended during the same period. Trieste holds residential seminars and research workshops on subjects such as material physics, micro-processing, energy physics including fusion and solar, geophysics, biophysics, neurophysics, laser work and, more recently, environmental physics of the oceans and deserts. I have not as yet visited Trieste but I understand that all this is accomplished with only three professional administrators!

Salam was in Scotland last month where he received an award as part of Edinburgh's first science festival. I understand that Scotland itself is seeking to set up an international science centre along the lines of Trieste. Undoubtedly, the SDA will soon be lobbying for funds and I have heard Caithness suggested as a possible location in the aftermath of Dounreay. He may mention this possibility which has several positive aspects. Apart from appeasing the Scots, it would provide a forum where Third World scientists could work alongside our own pursuing international goals such as environment. Trieste costs about £15 million a year, 90% from the Italian government.

I hope Salam will not lobby you about funding. However you may like to draw him on the value of setting up yet another new institution. See attached press clipping from the Sunday Times of April 9.

Here are some topics where Salam's views will be of interest:

- (i) Must we go on building ever larger particle accelerators such as the 27 km LEP ring at CERN or the 60 mile SSC in Texas? Can there not be cheaper methods of testing the new generation of theoretical ideas which he pioneered? (In Stephen

Hawking's book, A Brief History of Time, it is suggested that we will ultimately need an accelerator the size of the universe itself!

- (ii) The Government is a staunch supporter of basic science and does not expect a specific economic return from its investment. How do we therefore ensure that the money is concentrated on the science and not frittered away on administration? How can we ensure that places like CERN operate more like Trieste?
- (iii) Is Britain getting its fair share of Nobel Prizes? Are the lobbyists of other countries better organised?
- (iv) How do we reconcile the enormous capital intensity of big science such as particle physics, astronomy, or genome sequencing, where large teams are inevitable, with sponsorship of individual talent in financially far smaller fields?

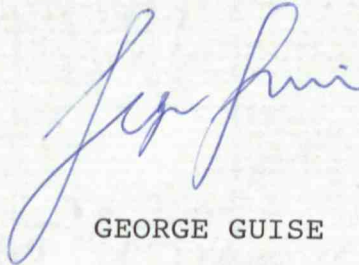
Does the bureaucracy of the research councils frequently miss some brilliant but unorthodox idea?

Should we have two science budgets, one for capital intensive work and another for smallscale support, so that overruns in the former do not penalise the latter?

- (v) Does Britain have the balance of basic, strategic and applied science about right or are we failing in any areas?

- (vi) What is his attitude to applied science? Should government support it financially or leave it to industry?
- (vii) Draw him on the emphasis he places on transferring science to the Third World rather than technology. His argument is that if technology alone is given it will have to be continuous. By contrast, once basic science is understood the technology will ultimately become indigenous.

There may be fundamental ideas here of great relevance to the manner in which we spend our aid funds.



GEORGE GUISE

NB: 1. I believe Salam was offered a knighthood a few years back but was unable to accept because he is not a British citizen.

2. He believes defence expenditure is one of the great world evils destroying wealth and impeding progress. He is no socialist and may have ideas about how worldwide defence expenditure could be reduced. You may however wish to avoid this area.

3. He follows an intense schedule of worldwide travel which he is pushing to the limits of his health. He is aged 63. You will recall that he missed the Nobel lunch but was utterly delighted with the letter which you sent.

First-class science for Third World

PHYSICS

by Neville Hodgkinson

ABDUS SALAM, the Pakistani-born Nobel prizewinner, was yesterday honoured for his 30-year campaign to help scientists from impoverished Third World countries to participate in expensive, high-technology work at the frontiers of knowledge.

Salam, professor of theoretical physics at Imperial College, London, received the first Edinburgh Medal, awarded as part of the city's first Science Festival, which ends on Wednesday. Inspired by his work, Scotland itself is looking to set up an international science centre.

Twenty-five years ago his efforts led to the establishment of the International Centre for Theoretical Physics in Trieste, Italy.

This is recognised worldwide as the place where scientists from developing countries can most fruitfully make contact, and organise joint collaboration, with their more richly-endowed peers from the advanced industrial nations.

In his Edinburgh lecture, delivered after the award ceremony in

the City Chamber, Salam described how the Trieste centre's supporters — notably the Italian government — have had their altruism rewarded, with a flood of industrial and technological spin-offs from its work.

He recalled how most industrialised countries opposed funding when the proposals were first mooted at a conference of the International Atomic Energy Authority in 1962.

The Australian delegate declared: "When Professor Salam talks of theoretical physics, let us remember that theoretical physics is the Rolls-Royce of science. What the developing countries need are donkey carts."

However, less-privileged countries were enthusiastic, seeing the centre as a means of overcoming the isolation of their top physicists, and helping to combat their brain drain. It started with a budget of

£200,000, which has risen to almost £10m a year.

Salam says: "Science feeds on science. Men of science wish to work where other such men are and where they obtain facilities."

As an "anti-brain drain device", the scheme has worked superbly. "Out of 18,000 visits which we have had from developing country physicists, not one has gone away from his country through the operation of the Trieste centre."

Edinburgh, and Scotland, should now consider the creation of similar international centres, Salam believes.

They too should have a special mandate to help poorer countries, as a means of bringing a global dimension to their work.

Only by bringing the modern scientific transformation to the Third World could there be hope of tackling global problems such as the destruction of the rain forests.

But Scottish industry would also benefit.

In Trieste, "a number of new endeavours have opened up because we happened to be there". A synchrotron radiation laboratory has been established, a research area has been constructed on the basis of the work of the centre, and the Italian government has instituted an international school for advanced studies.

The Italians are also considering establishing three new international centres in Trieste: one for high technology and new materials, one for earth sciences and the environment, and one for chemistry.

Howard Firth, director of the 10-day Edinburgh Science Festival which hopes to do for science and technology what the Edinburgh Festival has done for the arts, said last week that in anticipation of Salam's call, the Scottish Development Agency has signalled a willingness to pay for a feasibility study for a Trieste-style centre, and some potential backers are interested.

Abdus Salam

BIO DATA

ABDUS SALAM

Highlights

1. As a Research Scientist

Nobel Prize in Physics in 1979 for the prediction of the unification of the electromagnetic with the weak nuclear force. Professor Salam is one of the two living Nobel Prize Laureates in Sciences who are Third World nationals.

2. As Educator

- a) Professor, Government College, Lahore, (1951-1954).
- b) Head of the Mathematics Department at the Panjab University, Lahore, (1951-1954).
- c) Founded and headed the Theoretical Physics Department at Imperial College, London in 1957 (was responsible for producing around 50 Ph.D's in theoretical physics from developing countries, like India, Pakistan, Bangladesh, Brazil, Ghana, Nigeria, Lebanon, Iran, Iraq, Greece and others, in addition to UK Ph.D's).
- d) Adviser to the Education Commission of Pakistan in 1959. Author of the Report on the "Structural Changes in Pakistan's Educational System", commissioned by the Government of Pakistan, (1970).
- e) Pioneered Physics Teaching Colleges at the Trieste Centre in English and French held during 1976 and later.

- f) Responsible for the Regional Workshop Course in Curriculum Development in Physics, Mathematics and Computer Sciences in Kenya, Africa, 1986.
- g) Responsible for the creation of New Physics Centres and Summer (and Winter) Annually-running Schools at Nathiagali (Pakistan), Cuzco (Peru), Petra (Jordan), Khartoum (Sudan), and Bogota, (Colombia).

3. Experience as Science Administrator

- a) Member Pakistan Scientific Commission (1959).

Governor from Pakistan to IAEA Board of Governors (1963).

Member and Chairman (1972), United Nations Advisory Committee on Science and Technology (1964-1975).

Member, United Nations Founding Committee for the UN University (1970-1973).

Member, UN University Advisory Committee (1981-1983).

Chairman, UNESCO Advisory Panel on Science, Technology and Society (1981).

- b) Founded and directed the International Centre for Theoretical Physics (ICTP) since 1964 (set up under the auspices of the IAEA, UNESCO and the Italian Government). The Centre has imparted training for research and research experience to 27,000 visiting scientists since its inception. (During the period 1970-86, the Centre received 3,500 high-level physicists and mathematicians (mostly for post-doctoral experience) from Africa and the Arab region, 4,000 from Asia, 1,800 from Latin America, 2,700 from Eastern Europe, 2,200 from North America, plus 9,000 from Western Europe, including Italy).

The Centre started with a budget of \$350,000 (in 1964) which has increased by a factor of around 30 to \$10 million (1986), under Salam's directorship.

During 1986 alone, the Centre welcomed 3,600 physicists and mathematicians who were administratively looked after by just three professional staff members. (Till three years ago, there was just one professional administrative staff member at the ICTP).

- c) Training Colleges and Research Workshops have been held at the Centre in Trieste on subjects such as physics of materials and microprocessors, physics of energy, physics of fusion, physics of reactors, physics of solar and other non-conventional energy, geophysics, biophysics, neurophysics, laser physics, physics of oceans and deserts, and systems analysis - this, in addition to high energy physics, condensed matter physics, mathematics, both pure and applied, as well as quantum gravity, cosmology, atomic and nuclear physics.

- d) Since 1981, research workshops and extended research colleges have been organised in developing countries - in China, Ghana, Bangladesh, Colombia, Kenya, Sri Lanka and Sudan; these were 4 - 8 week activities on solid state physics, monsoon dynamics, solar physics, physics of microprocessors, physics of desertification and physics and mathematics teaching.

- e) As Founder President of the Third World Academy of Sciences, Salam has successfully secured a starting annual budget of around \$2 million, for stimulating research in basic sciences, in the Third World.

As Servant of Peace

Awarded the Atoms for Peace Medal and Award (Atoms for Peace Foundation), (1968).

Member, Scientific Council, SIPRI (Stockholm International Peace Research Institute), (1970 -).

Peace Medal (Charles University, Prague), (1981).

Premio Umberto Biancamano, Italy, (1986).

Dayemi International Peace Award (Bangladesh), (1986).

Member, Council, University for Peace, Costa Rica (1981-1986).

Abdus Salam's name means "Servant of God, Who is Peace".

United Nations Assignments

Scientific Secretary, Geneva Conferences on Peaceful Uses of Atomic Energy	(1955 and 1958)
Elected Member of the Board of Governors, IAEA, Vienna	(1962-63)
Member, United Nations Advisory Committee on Science and Technology	(1964-1975)
Elected Chairman, United Nations Advisory Committee on Science and Technology	(1971-1972)
Member, United Nations Panel and Foundation Committee for the United Nations University	(1970-1973)
Member, United Nations University Advisory Committee	(1981-1983)
Member, Council, University for Peace (Costa Rica)	(1981-1986)
Elected Chairman, UNESCO Advisory Panel on Science, Technology and Society	(1981)

V. Other Assignments

Member, Scientific Council, SIPRI (Stockholm International Peace Research Institute)	(1970)
Elected Vice Chairman, International Union of Pure and Applied Physics (IUPAP)	(1972-1978)
Elected First President of the Third World Academy of Sciences	(1983-)

VI. Awards for Contributions to Physics

Hopkins Prize (Cambridge University) for the most outstanding contribution to physics during 1957-1958	(1958)
Adams Prize (Cambridge University)	(1958)
First recipient of Maxwell Medal and Award (Physical Society, London)	(1961)

- VI. Awards for Contributions to Physics (cont'd)
- | | |
|--|--------|
| Hughes Medal (Royal Society, London) | (1964) |
| J. Robert Oppenheimer Memorial Medal and Prize (University of Miami) | (1971) |
| Guthrie Medal and Prize (Institute of Physics, London) | (1976) |
| Sir Devaprasad Sarvadhikary Gold Medal (Calcutta University) | (1977) |
| Matteuci Medal (Accademia Nazionale di XL, Rome) | (1978) |
| John Torrence Tate Medal (American Institute of Physics) | (1978) |
| Royal Medal (Royal Society, London) | (1978) |
| Nobel Prize for Physics (Nobel Foundation) | (1979) |
| Einstein Medal (UNESCO, Paris) | (1979) |
| Shri R.D. Birla Award (Indian Physics Association) | (1979) |
| Josef Stefan Medal (Josef Stefan Institute, Ljublijana) | (1980) |
| Gold Medal for outstanding contributions to physics (Czechoslovak Academy of Sciences, Prague) | (1981) |
| Lomonosov Gold Medal (USSR Academy of Sciences) | (1983) |
- VII. Awards for Contributions towards Peace and Promotion of International Scientific Collaboration
- | | |
|--|--------|
| Atoms for Peace Medal and Award (Atoms for Peace Foundation) | (1968) |
| Peace Medal (Charles University, Prague) | (1981) |
| Premio Umberto Biancamano (Italy) | (1986) |
| Dayemi International Peace Award (Bangladesh) | (1986) |

III. Academies and Societies

Elected, Fellow, Pakistan Academy of Sciences (Islamabad)	(1954)
Elected Fellow of the Royal Society, London	(1959)
Elected, Fellow, Royal Swedish Academy of Sciences (Stockholm)	(1970)
Elected, Foreign Member of the American Academy of Arts and Sciences (Boston)	(1971)
Elected, Foreign Member, USSR Academy of Sciences (Moscow)	(1971)
Elected, Foreign Associate, USA National Academy of Sciences (Washington)	(1979)
Elected, Foreign Member, Accademia Nazionale dei Lincei (Rome)	(1979)
Elected, Foreign Member, Accademia Tiberina (Rome)	(1979)
Elected, Foreign Member, Iraqi Academy (Baghdad)	(1979)
Elected, Honorary Fellow, Tata Institute of Fundamental Research (Bombay)	(1979)
Elected, Honorary Member, Korean Physics Society (Seoul)	(1979)
Elected, Foreign Member, Academy of the Kingdom of Morocco (Rabat)	(1980)
Elected, Foreign Member, Accademia Nazionale delle Scienze (dei XL), (Rome)	(1980)
Elected, Member, European Academy of Science, Arts and Humanities (Paris)	(1980)
Elected, Associate Member, Josef Stefan Institute (Ljublijana)	(1980)
Elected, Foreign Fellow, Indian National Science Academy (New Delhi)	(1980)

II. Academies and Societies (cont'd)

Elected, Fellow, Bangladesh Academy of Sciences (Dhaka)	(1980)
Elected, Member, Pontifical Academy of Sciences (Vatican City)	(1981)
Elected, Corresponding Member, Portuguese Academy of Sciences, (Lisbon)	(1981)
Founding Member, Third World Academy of Sciences	(1983)
Elected, Corresponding Member, Yugoslav Academy of Sciences and Arts (Zagreb)	(1983)
Elected, Honorary Fellow, Ghana Academy of Arts and Sciences	(1984)
Elected, Honorary Member, Polish Academy of Sciences	(1985)
Elected, Corresponding Member, Academia de Ciencias Medicas, Fisicas y Naturales de Guatemala	(1986)
Elected Honorary Life Fellow, London Physical Society	(1986)

IX. Orders

Order of Nishan-e-Imtiaz (Pakistan)	(1979)
Order of Andres Bello (Venezuela)	(1980)
Order of Istiqlal (Jordan)	(1980)
Cavaliere di Gran Croce dell'Ordine al Merito della Repubblica Italiana	(1980)

X. D.Sc. Honoris Causae

Panjab University, Lahore, Pakistan	(1957)
University of Edinburgh, Edinburgh, UK	(1971)
University of Trieste, Trieste, Italy	(1979)
University of Islamabad, Islamabad, Pakistan	(1979)
Universidad Nacional de Ingenieria, Lima, Peru	(1980)
University of San Marcos, Lima, Peru	(1980)
National University of San Antonio Abad, Cuzco, Peru	(1980)
Universidad Simon Bolivar, Caracas, Venezuela	(1980)
University of Wroclow, Wroclow, Poland	(1980)
Yarmouk University, Yarmouk, Jordan	(1980)

D.Sc. Honoris Causae (cont'd)

University of Istanbul, Istanbul, Turkey	(1980)
Guru Nanak Dev University, Amritsar, India	(1981)
Muslim University, Aligarh, India	(1981)
Hindu University, Banaras, India	(1981)
University of Chittagong, Bangladesh	(1981)
University of Bristol, Bristol, UK	(1981)
University of Maiduguri, Maiduguri, Nigeria	(1981)
University of the Philippines, Quezon City, Philippines	(1982)
University of Khartoum, Khartoum, Sudan	(1983)
Universidad Complutense de Madrid, Spain	(1983)
The City College, The City University of New York, New York, USA	(1984)
University of Nairobi, Nairobi, Kenya	(1984)
Universidad Nacional de Cuyo, Cuyo, Argentina	(1985)
Universidad Nacional de la Plata, La Plata, Argentina	(1985)
University of Cambridge, Cambridge, UK	(1985)
University of Goteborg, Goteborg, Sweden	(1985)
Kliment Ohridski University of Sofia, Sofia, Bulgaria	(1986)
University of Glasgow, Glasgow, Scotland	(1986)
University of Science and Technology, Heifei, China	(1986)
The City University, London, UK	(1986)

XI. Pakistan Assignments

Member, Atomic Energy Commission, Pakistan	(1958-1974)
Elected President, Pakistan Association for Advancement of Science	(1961-1962)
Adviser, Education Commission Pakistan	(1959)
Member, Scientific Commission, Pakistan	(1959)
Chief Scientific Adviser to President of Pakistan	(1961-1974)

Pakistan Assignments (cont'd)

Founder Chairman, Pakistan Space and Upper Atmosphere Committee	(1961-1964)
Governor from Pakistan to the International Atomic Energy Agency	(1962-1963)
Member, National Science Council, Pakistan	(1963-1975)
Member, Board of Pakistan Science Foundation	(1973-1977)

XII. Pakistani Awards

Sitara-i-Pakistan (S. Pk.)	(1959)
Pride of Performance Medal and Award	(1959)
The Order of Nishan-e-Imtiaz (the highest civilian award)	(1979)

XIII. As "Servant of Peace"

Member, Scientific Council, SIPRI (Stockholm International Peace Research Institute), (1970 -).

Awarded the Atoms for Peace Medal and Award (Atoms for Peace Foundation), (1968).

Peace Medal (Charles University, Prague), (1981).

Premio Umberto Biancamano, Italy, (1986).

Dayemi International Peace Award (Bangladesh), (1986).

Member, Council, University for Peace, Costa Rica (1981-1986).

XIV. Published Papers

Around 250 scientific papers on physics of elementary particles. Papers on scientific and educational policies for developing countries and Pakistan.

XV. Scientific Contributions

Research on physics of elementary particles. Particular contributions:
1) two-component neutrino theory and the prediction of the inevitable parity violation in weak interaction; 2) gauge unification of weak and electromagnetic interactions - the unified force is called the "Electroweak" force - a name given to it by Salam; predicted existence of weak neutral currents and W,Z particles before their experimental discovery; 3) symmetry properties of elementary particles; unitary symmetry; 4) renormalization of meson theories; 5) gravity theory and its role in particle physics; two tensor theory of gravity and strong interaction physics; 6) unification of electroweak with strong nuclear forces, grand (electro-nuclear) unification; and 7) related prediction of proton-decay; 8) supersymmetry theory, in particular formulation of superspace and formalism of superfields.

XVI. Books

Symmetry Concepts in Modern Physics, Iqbal Memorial Lecture, (Atomic Energy Centre, Lahore), 1966

Edited with E.P. Wigner, Aspects of Quantum Mechanics, (Cambridge University Press), 1972

"Ideals and Realities", Selected Essays of Abdus Salam, Edited by Z. Hassan and C.H. Lai, World Scientific Publishing Co.Pte.Ltd., 1984. Translated into Arabic, Chinese, Italian, Persian, Rumanian, Russian and Spanish..

With Ergin Sezgin, "Supergravity in Diverse Dimensions", (Vols. I and II), to be published by World Scientific Publishing Co.Pte.Ltd. in 1987.

Biography, "Abdus Salam", by Dr. Abdul Ghani, (Ma'aref (Printers) Limited, Defence Housing Society, Karachi), 1982.

E.R.

Notified
on

10/30/89
S/S.

CF

P/A

PRIME MINISTER

George Guise tells me that Professor Abdus Salam will be in London on 4 or 5 May and suggests that he will be worth seeing for half an hour or so. He is the Nobel Physicist who worked out the links between the electro-magnetic force and the weak nuclear force. He runs the Trieste Institute (which is a centre of excellence on basic science involving scientists from the developing world). I attach the long term diary page for those days.

Do you wish to see him? If so, we could probably find some time on the Friday morning.

DM

Yes not

DOMINIC MORRIS

21 April 1989



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