A. Vibert Douglas

Manuscripts

Miscellaneous Mss Notes by Dr. Douglas

39.

I.S.S.

2 verses 1. Study to show thyself approved of God,
a workman that needeth not to be ashamed,
rightly dividing the word of Truth.
II Tim 2. 15

In any walk of life, anyone conscientiously & faithfully following out these instructions, may be called a student

2. After this I beheld & lo a great multitude [of students] whom no man could number, of all nations & kindreds, and people, and tongues ... "These are they which came out of great Tribulation" Rev. 7: 9, 14.

3. Strengthen ye the weak hands
Confirm the feeble knees
Say to them ... Be strong, fear not.
Isaiah 35. 3

1. Students — rightly dividing the word of truth

I.S.S. on every campus of Canada & in over 40 other countries stands for Courage to seek truth
Freedom to seek truth
the full richness of wisdom & understanding which can only come by contact with the best in the thought, the philosophy of other peoples.

I.S.S. by encouraging conferences, student & teacher exchanges, international seminars, & by having a few travelling secretaries who are men of world-vision, helps the students of any one country, e.g. Canada, to strengthen enrich & broaden their own intellectual & cultural life.

I.S.S. links students the world over and seeks to develop a world-vision & a consciousness of some common bond & purpose absolutely independent of political aims & differences: a unity in the realm of the things of the mind.

for certain selected projects

1. bkpt for Innsbruck students
2. Books & medicines for Lodz, Poland
3. T.B. San. for Finnish students
4. Student Hostel, Nanking
5. Emergency fund for special need for Can. students.

Service to Students on an International Scale

The leaders of Tomorrow.

The words of Augustine in AD 397 might be the world wide challenge of ISS today.

Courage my mind and press on mightily
Press on where truth begins to dawn

2. Students of many nations who have come out of great tribulation.

In most of the countries of Europe, in China, in India & Burma, in the East Indies, the majority of students are hungry, cold, without adequate clothing, or books or basic equipment like pencils & paper. Thousands are weak with undernourishment and have to fight T.B. and other illnesses.

Devastation of college buildings
museums
libraries
laboratories.

3. I.S.S. stands for literal acceptance of the command Strengthen ye the weak hands say to them Be strong, fear not.

From the headquarters in the Old Rue Calvin (13) in Geneva, books, food, medicines & student supplies went to every devastated country as it was liberated. ISS committees were set up & self-help organized & thus all student relief has been handled by men who make need not political opinion the sole criterion.

Part of our Can. contribution goes to Geneva for the general relief fund – part is earmarked

For C.I.A.

1. Desire to visit Poland 1. Life of Mme Curie.
2. Copernicus & 1543 Lecture by her at Sorbonne 1921
1939. Dr Adamowicz.
1946, 47, 48 1959 Helsinki.
Poznan astronomer 1958

2. Visa 3 weeks
Money. Orbis. $7.50/day voucher @ Zl 24 = $1.00
Zl 40 - 77 - 100 = $1.00 internal rate
but not for tourist.

3. Freedom of Speech - Tourist - freedom of travel within country
Paris → Warsaw LOT - airport routine - Hotels MDM.
City. 85% Ger. devastation - new + old - Jos Stalins 40 storey
wedding cake type skyscraper. panorama from balcony 30th floor -
Polish Acad of Sci. Halls by culture - Children's + adult Sci - Centre
Solid grey stone Ministries -
Police H.Q.
Vistula - parks + bridges + Embassy of Can -
Southam, Scott, K Machure
Lunch - Kwiatowski + Infeld Jr. - Comdlg + Wiesio - *
Embassies of G.B. Belgium, Swiz, huge USA under Construc
+ Mongolian.
Park - roses - pools - Old Palace + th St. theatre.
Art gallery - Mexican art + sculpture
modern Polish art - abstract
Shrines for those shot against walls.
Old Town + New Town.
restorations. castle.

* Isolation of Res
Thinkers vs Scientists
Together; not new
but 800 yrs old.

5. Social Security - medical - etc.
hospitals, clinics
+ nursing homes.
non workers not covered -
Pensions + pensioners privileges.

Housing shortage -

Mr Bouresof - USSR Counsellor at Ottawa

Cracow - Wawel Castle 13-15 C Hans D. Hans Dürer
Italian renaissance const. - tapestries
Churches treasures
St Square & Rynek (Cloth Hall arcade. of gold.
Cathedral & crypt. enamel
St. Stanislaus - Queen Hedwig wife of 1st Christ King jewel.
Tomb of Mickiewicz - 18th Cent poet, spoiled by Requiem 1347-99.
Marianske - tower broken chord the cannon ? gp

Stwocz Wit Stoltz retable. Germans.
Art galleries. L da V.

Dominican Ch. shrine up side aisle
+ Cloister + mod. rel art

Franciscan

Jesuit - romanesque. dome

Religion - also Augsburg Prot ch.

to Paris Body returned to great Square.

Univ - oldest. Copernicus.
600 yrs

Astron - Austrian fort (Veux & Donermont

P. & students

Weliszka salt mine since 1044 2600 Polish Jews.
chapels, shrines, lake grotto, dance hall to 50 ft down

Torun birthplace of Copernicus -
old & new towns. Teutonic Knights
1231 Pop beauty of flowers & park.
Old city - beer & Vistula bridges
New Univ of Copernicus & shop + river gates.
Industry & Trade with Hungary, Bulgaria.
+ agric model farm -
+ oak forest with graves
stork nests.

Mr Lubreaski of Torun.

has already a record of which the British Commonwealth may be very proud.

It is no exaggeration to say that never in the history of mankind has so much constructive work for human betterment been in progress and it is on an international scale which is ~~truly magnificent~~ very impressive.

2. I propose giving you a brief somewhat random series of examples of the most international effort being carried by the specialized agencies of the UN reminders of some of these cooperative endeavours before settling down to a fuller presentation of two fields of research which particularly interest me as an astronomer.

1958 WHO 10th Anniversary Special Issue 1960. 12th Year

FAO

Unicef

Unesco

UN Tech. Assist. + Colombo Plan

First let us look at WHO [est. 1948]

→ International research teams to fight disease
T.B. ~~Hundreds of thousands~~ Several ~~[illegible]~~ millions of children
in many countries inoculated against TB.
with substance discovered by 3 French doctors B.C.G.
It is manufactured now in India
at a laboratory set up in cooperation
with the great production + research
lab. in Copenhagen.

→ WHO with UNICEF organizes
the largest TB. campaign ever undertaken
2 years ago testing 4.2 million children
of India + immunizing 14 million.

Malaria is another scourge of hot countries
of 360 10^6 people in India
200 10^6 live in heavily malarial areas
+ 100 10^6 feel ill every year.

India Research on DDT spraying of
~~dwellings + all cloth~~
and a DDT production plant
to get control of the problem.
a multiple project
i First benefit
ii Then new land will be available
for cultivation + provide more food.
In one such area a 30% more grain

To fight, reduce & eradicate trachoma in Morocco
WHO teams used aureomycin. 10 000 treated & most cured.

To aid in the fight against TB Malaria
Yaws, trachoma Canada sent
✓ 2 mobile laboratories to Cambodia

Open sores penicillin

The WHO sent specialists & microscopes & other equipment to Thailand to train young men & women to fight malaria & set up training centre

Health problems on every continent are closely associated with climate, land condition, agriculture & food, hence the importance of FAO & WHO working together

Land reclamation, irrigation fertilizers, the best type of crop or of variety of seed for the location
✓ These are problems for long study & research. Nepal maize improvement of strain

✓ Can one push back the desert in Asia, africa, the americas, Australia?
Hence Arid Zone Research
subsidized on an international scale by Unesco & now regarded as a major Project in their next 2 year programme 1956–58
1959–60.

André Siegfried

In Libya a French expert is directing research on sand dune fixation and reforestation.

Where the Romans had irrigated terraces with olive orchards neglect led to loss of moisture, erosion of top soil, drifting in of sand + desolation.

FAO experts including one from Morocco are showing the native workers how to rebuild the terraces and restore good productive conditions again; thus to supply their own needs + be less dependant on imports.

e.g. a reed known as thatch grass holds the soil if planted in a grid pattern + inside the grid castor oil plants acacia + eucalyptus seedlings are set out + later olive trees may be planted.

UN Tech. assistance was asked by the Philippine Government to send an FAO ~~expert~~ to direct them in research on the control of a virus disease that had attacked cocoanuts ~~and another research on forest products~~

→ In all 13 projects were carried out in the Philippines under the direction of experts from Australia, Bolivia, Canada, China, Denmark, France Holland, India, Italy, N.Z. Norway, Sweden, Switzerland USA + U.K. 15

As this is for problems in just one country – the mammoth task of UN assistance Coordination + Planning + organisation is obvious.

Hugh Keenleyside

Many countries need expert advice in one field and can give it in another field.

It is interesting to read of an Israeli scientist aiding the salt-evaporation research in Ceylon;

a Chilean cattle expert training the Ethiopians to inoculate their herds against rinderpest which used to slay an estimated ~~1~~ million cattle per annum

~~of a Jamaican forestry research scientist directing similar research in Haiti.~~

of a Costa Rica agric. economist helping in Peru ~~with~~ to improve quality & quantity of production in the high arable plateaus of the Andes. Incas & Pizarro.

of a Yugoslav Expert directing tanning classes and research to increase the output of Indonesia's leather industry.

The Colombo Plan was begun in 1950 with this object:

"to develop human & material resources of the countries of South & S.-E. Asia and to build a better life for their people"

Every Commonwealth country is in this as a donor member & in some cases as a receiver member also.

Canada $133 millions in 1951-56.

Three aspects may be mentioned

1. Capital assistance by large grants of money or machines for specific basic purposes such as Canada's $2½ million of elect. equipment for a great Power & Irrigation Project in India $5 10^6 for the Canada-India Atomic Reactor to generate power, $20 10^6 for another Hydro Elec. Power Plant. 2 power plants in Pakistan + locomotives, Railway ties $2.77 10^6 fisheries development equipment in Ceylon etc etc

2. Experts 3700 have been sent to the needy countries.

Canada alone (1954 - 56 inclusive) 74 men of whom 37 are now working in Burma or Cambodia, Ceylon, India, Indonesia, Malaya, North Borneo & Pakistan

In Pakistan our highly developed methods of aerial survey have been put into operation there

3. Trainees 7000 have been sent abroad for training of whom 492 fellows & scholars came to Canada from 12 countries & 524 in for academic or practical courses in agriculture, engineering, medicine public administration, co-ops marketing etc at Q nuclear physics radioactive isotope tracer work in biology, pathology & industrial relations

~~Intl. Atomic Energy Organization~~ UNESCO 1954

~~For industrial & other uses~~ power

See Colombo Reports. India & S.E. Asia Power. Nepal maize Burma Jute & Silk.

UNESCO

10.

1. Fund. Ed^n: Sch. + Univ + Tech Ed^n
2. Soc. Sci. - Statistics - Computing centres
3. Cultural - exchanges - art, lit, - preserv of archeological treasures
   Libraries
   understanding
4. Science - ICSU
   Arctic Zone
   I.G.Y. satellite
   Int. At Energy Comm.
   Power plant
   Medical - 12000 consignments per yr from Harwell

I.G.Y.

See notes

Radio Astron.

Conclusion: We have ~~been~~ taken a glimpse at ~~the~~ what is being done internationally to increase knowledge and to apply knowledge & techniques ~~for~~ to the improvement of man's living conditions & health.

✓ Yeats wrote: The wrong of unshapely things
Is a wrong too great to be ~~taken~~ born.

In a world where there is still much to dishearten us ~~politically~~ in the political field, where hatred & distrust are not dispelled, it is good for us to ponder upon and talk about the international cooperation to fight disease, poverty, hunger & ignorance. Never in the history of mankind has there been so vast a series of ~~unselfish~~ programmes of international cooperation in ~~the~~ research for the good of mankind and in the exchange of skills

Here lies
Isaac Newton, Knight,
Who, by a Vigour of Mind almost supernatural,
First demonstrated
The Motions and Figures of the Planets,
The Paths of the Comets, and the Tides of the Ocean.
He diligently investigated
The different Refrangibilities of the Rays of Light,
And the Properties of the Colours to which they give rise.
An assiduous, sagacious, and faithful Interpreter
Of Nature, Antiquity, and the Holy Scriptures,
He asserted in his Philosophy the Majesty of God,
And exhibited in his conduct the Simplicity of the Gospel.
Let Mortals rejoice
That there has existed such and so great
AN ORNAMENT OF HUMAN NATURE.
Born 25th Dec. 1642, Died 20th March, 1727.

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Born 25th Dec. 1642, Died 20th March, 1727.

Literal translation of inscription on the monument to Newton placed in Westminster Abbey in 1731.

Silence.

Carlyle: looking out on the noisy insanity of the world, words with little meaning actions with little sense, how one loves to contemplate the vast realm of silence — silence is deep as eternity.

Austin: Within the hollow silence of the night I lay awake & listened.

Milton: How sweetly did they float upon the wings of silence through the empty-vaulted night.

Keats: Heard melodies are sweet but those unheard are sweeter
∴ yt

Byron: In solitude when we are least alone.

Quakers - Chas. Lamb
Mysticism - Dean Inge. Edd. Schweitzer. Tagore.

International Record of Scientic rc.

Astron.	Physics	Geol.	Philos
Kidinnu	Archimedes	Theophrastus	Plato
Hipparchus	Lucretius	Steno (Dane 1669, crystals 2's	
Copernicus	Galileo	James Hutton (Scott)	
Galileo	Newton	~~Smith~~	
Tycho Brahe	Boyle	Werner (German)	
Kepler	Pascal	Lehmann (")	
Newton	Zeeman	Bonpon (")	
Le Verrier	Stark	Cuvier (")	
Struve	Rutherford	Von Buch (Ger)	
de Sitter	Bohr	Wm Smith Eng.	
Einstein	Rydberg	Dana USA	
Weyl	~~Debye~~	Logan (Can)	
Lemaitre	Saha	Fedorov (Rus)	
W S Adams	Kapitza	de Geer (Sweden)	
Kimura		Vogt JHL (Norway)	
Chandrasekhar		Brøgger (")	
		Wolengraaff (Dutch)	
		Suess (Austria)	

15

Artists.

Leonard da Vinci
Michael Angello

Rubens

Corot
Monet

Dürer

El Greco
Murillo

Gainsborough
Hogarth

Hiroshigi

Rembrandt

(8)

Sculptors.

Michael Angello.

Rodin

Thorwaldsen

Homer
Virgil
Aesop of Gr.
Dante
Shakespeare
Tolstoy
Ibsen
Scott.
Swift.
Moliere
Goethe
Cervantes
Tagore

(13)

Law

Moses.
Persian
Solon
Justinian
Napoleon
Blackstone
Hammurabi
R. Pothier
Holmes

W R Inge 1899 Bampton Lectures

Mysticism is the attempt to realize, in thought and feeling, the immanence of the temporal in the eternal and of the eternal in the temporal.

See Dante Par. C 33

" Man only attains to the highest by surrender of spirit to the God who made it.

25 / 430

Potsfukke. Dutch Composer who inspired Bach so greatly.

Greig Scottish Norwegian.
Sibelius. Finland
Chopin Poland.
Mozart Austrian
Beethoven German

Gounod French.
Elgar. English
Palestrina Italy b. 1524-94
dir. sacred music Vatican

Tschaikowsky Russian

Law

Hammurabi

R J Pothier
Fr. Civil Law

Blackstone
(Wallingford)

Solon
Justinian
Napoleon
Holmes.

Fight apathy + cynicism
+ negativism.

Sir Rob Falconer (Wallace) UTQ Jan 44

There are those who never cease to grow.

... to understand more clearly the enigma of life.

... greater serenity of soul than is known to most men.

[See Dostoevsky - Bros Karamazov. God sets us only roads.

-- direct our thoughts to the manner of life & those who by sheer power of personal worth keep strong our faith in moral & spiritual values.

Sir Rob F. by W.R. Taylor.

"whose religion acquired by assault must be re-won by an effort of the mind

Augustini Confessionum XI. 27

Insiste, anime meus, et adtende fortiter.
Adtende, ubi albescit veritas.

Light
flame
warmth

Touched
honoured.
difficult task

thrill to come to India
ancient land where
early people
temples, palaces & tombs
ancient astronomy
math,
art,
lit + philosophy
+ religion
mystics -

Today facing the changing
world with realism +
energy + vision amid
vast problems.

20 years ago Toronto Conf
The task of planning
- endless details -

Your thoughtfulness +
overwhelming kindness

meeting us, entertaining
us, helping us with
our travel plans, our
shopping etc.
The evening supper
The trip to Agra.
The tea + the coffee
every day - Templelamp
The warmth of your

friendship:
We want you to know
how much we
appreciate all

We join with you in
your prayer for
peace in the world
& peace in our own
spirits

Om, sat, tat, Om
Shanti, shanti, shanti

Thank you, one & all.

Dr Roy.
Mrs Menon
Miss Henk Singh
Mrs Wadia.

Viola Kalm
544-5975

unesco

The Canadian National Commission for Unesco
La Commission Nationale Canadienne pour l'Unesco
Third National Conference/Troisième Conférence Nationale

March 26 - 29 Mars

6. K. Hui
Stalin
7. Printer
8. 2 men
9. Culture
music
opera
ballet
winter

1. Remarks made in [illegible]
2 – Ambassador last year

3. IAU 22-31 Aug.
2 weeks long

4. Prague. Story of
Renaissance for the Renaissance
Acoustics –
Summary –

Chas IV
Wenceslas
St Vitus
Tycho + Huss
Tycho Brahe
+ Kepler
Smetana
+ Dvorak
Kafka

5. To High Tatras – Engineers
Teachers
Gen Students

CIIA
autumn
1968

Emperor Haile Selassie,
King of Kings of Ethiopia,
Lion of Judah, The Elect of God.

1952 Federation with Eritrea
600 mi coast

Cushites speaking Hamito-Semitic
languages
from Sudan to Red Sea
+ Gulf of Aden

Kingdom of Aksum, 5th Cent.
fragments of inscriptions

estimates 20 10^6 pop^n

Homer refers to them 'furthest of mankind
the sun sets in their country'.

Orthodox Ch. of Ethiopia
one nature in Christ Monophysite.

Some Jewish ceremonies are retained — circumcision
ark, goat sacrifice in redemption ceremony

Eucharist both wafer & wine

Ch. schools — the Cath ones prior to 1900

Ethiopia

Intl.

1 SCM - Lunch. Feb 19. 1965

Hist
Legend
Topography
Geog
Rel
Edu

1950

| Ship
| Steampacket
| Dublin
| Wexford
| Fermoy
| Glengarriff
| Cahirciveen
| Dingle
| Galway
| Achill
| Carrow
| (Donegal)
| L'pool packet
| London
| Paris
| Pontigny
| Dijon
| Pontarlier
| Lausanne
| Chamonix
| Visp
| Zermatt
| Saas fee
| St Maurice
| Zurich
| Mulhouse
| Colmar
| Lille
| London
| Ship

30 7 addresses

1949

| Ship
| London
| Geneva
| Zurich
| Bale
| Luxembourg
| Breda
| Ship
| London
| Leeds.
| Ship
| Copenhagen
| Kraegerup
| Copenhagen
| Hamburg
| Lubeck
| Rilse
| Ship
| London
[TCA]
Vanc. BC.
| Liverpool
| Glasgow
| Inverness
| Aberdeen
| Dundee
| Edinburgh
| Huddersfield

27 13 addresses

1948

| Ship.
| London
| Camb.
| London
| Ship
| Groo.
| Haag.
| Amster
| Train
| Copenhagen
| Aarhus
| Ship
| London.
| Reading
| B'ham
| B'head.
| Bradford.
| Leeds.
| Hull
| Brighton
| Lon
| train
| Plön
| London
| Camb.
| Ox.
| Barn Cottage.
| Somerville
| London (Hermes)
| Eastbourne
| Paris
| Zermatt
| Lucern
| Zurich
| "
| Basle
| Ship

37 beds 25 addr

No.	NAME								MEMORANDA
1.	MA Robert Lockhart BA 2nd Class								mentioned
2	MA Miss Doreen Jones BA 2nd Class (standing)								} neither qualified for degree.
3.	PhD W D Ryan.	1956-57							(BSc Queens Univ. Belfast. Lecturer in Sl. Eng. RMC) PhD. Sept 1957
4	MA David Hogg BA (Queens 1957)	1957-58							
5	MA Arnold Matthews BA " "								
6	MA Gerald Auger BA (" 1958)	1958-59							
7	John Black	1959-60							
8	John McDougall	1959-60							

Do thy tasks & live thy life and neither
fear nor worship the powers of evil — thus
taught Zoroaster centuries ago. It is
good advice. We see much of evil in the
world picture — distrust, untruth, deliberate
cruelty, selfishness and apathy. But we must
look steadily at the constructive forces and, throwing
aside all temptation to negativism & cynicism,
make our influence in our immediate environment

count on the side of true, kindly livi
and constructive international thin

VAD/EG

Al Biruni AD 1029 at Ghaznah - Tr. by Ramsay Wright

"In the name of God the Merciful, the Compassionate, Him do we ask for aid."

"May God by His grace, and in the fullness of his mercy, favour accuracy of statement in the work."

"A number of people consider that beyond the eighth sphere there is a ninth entirely quiescent, because the prime mover must not be moved, and it is on this account that they describe it as motionless. But it is possible that it is not a body like the other spheres, otherwise its existence could be demonstrated. Many of our ancestors considered that beyond the eight spheres there is an infinite empty space, others a boundless quiescent substance, while according to Aristotle there is neither substance nor void beyond "the revolving bodies".

Sir Wm. Huggins (see Stratton. p. 4)

The news of Kirchhoff's discovery was to him "like the coming upon a spring of water in a dry and thirsty land. A feeling as of inspiration seized me. I felt as if I had it now in my power to lift a veil which had never before been lifted; as if a key had been put into my hands which would unlock a door which had been regarded as for ever closed to man — the veil and door behind which lay the unknown mystery of the true nature of the heavenly bodies."

Notes from W. W. Tarn.
Hellenistic Civilization -
1930. Inverness.
[lent me by Prof Gilmour.]

Eudoxos 4th Cent. BC. geocentric system

Heraclides (younger contemporary of Aristotle)
disc. earth turns on its axis
Merc. & Venus revolve around Sun
" adopted epicycles.

Aristarchus of Samos 310-230 BC. accepted this
& disc. Sun is far larger than earth.
he thought 300 x & hence proposed
his heliocentric theory with sun
& stars fixed - latter far off.

Archimedes, Appolonius, Hipparchus rejected
this bec. they could not fit observations
to system of circles about Sun.
Hipparchus insisted that science must stand
by the observations ("Save the phenomena")

Appolonius possibly produced the
Tycho Brahe idea planets round Sun
& Sun round earth

Conon of Alexandria, a friend of Archimedes
named a group of stars below handle
of Dipper (Urs. Maj.) after Berenice's
lock of hair dedicated for safety of her
husband Ptolemy III. Coma Berenicis
one of very few constellations in our sky
that do not go back to Babylonia

Hipparchus of Nicea (c 146 - 126)
carried further the work on epicycles
+ eccentric circles - producing the
system accepted by Ptolemy of Alex.

disc. Precession of Equinoxes - equinoctial
point moves forward 36" per year
actually 50".3757 per yr

Prof Schnabel 1923 was convinced that
Kidenas (Baby. Kidinnu
3rd cent BC or earlier)
was discoverer of precession

Hipparchus also made catalogue
of over 805 fixed stars with
lat + long + 3 magnitude.

Babylonian constellations reached
China before 500 BC.

Greek Mathematicians

Euclid 300 BC. not original
Compilation of Geometry
no royal road to Geometry
Geom. + algebra

Eratosthenes 275-200 BC practical measurements
Great Geographer - see p4

Apollonius of Perga Conic Sections
prob. began Trig.

Archimedes chief name amongst
all Gk. math -
Older than Apollonius
π limits  Ratio $\frac{\text{vol sphere}}{\text{vol of cylinder circumscribed}}$
invented terminology for expressing
nos up to any magnitude -
laid foundations of calc. of infinite
founded hydrostatics.
Lever, compound pulley
windlass, screw pump -
grapnels, burning glasses + improved
catapults.

Hipparchus employed Triangulation
in maps making

Eratosthenes - Geographer
Historical criticism & chronology
Math & philosophy
poet
history of comedy.

Circum of earth
arc Alexandria — Syene
≡ 252,000 stades
stade value disputed
probably gives 24662 miles
actual value (mean) 24857 miles

Believed oceans joined bec. of Tides in
in Indian & Atlantic oceans being similar
∴ said pos. sail Spain to India around
africa. or westward.

His world map poor in longitude
determination

Hipparchus improved this

Seleucus noted at Pers. Gulf Spring & Neap Tides
Poseidonius attributed these to phases of moon
he journeyed to Cadiz (Gades) to
observe atlantic tides -

Prof. Havelock
Toronto

Soc – soul of man
Socrates end in Italy

Plato believed soul to
a cosmos
or universal order

Heraclitus divine element in Universe

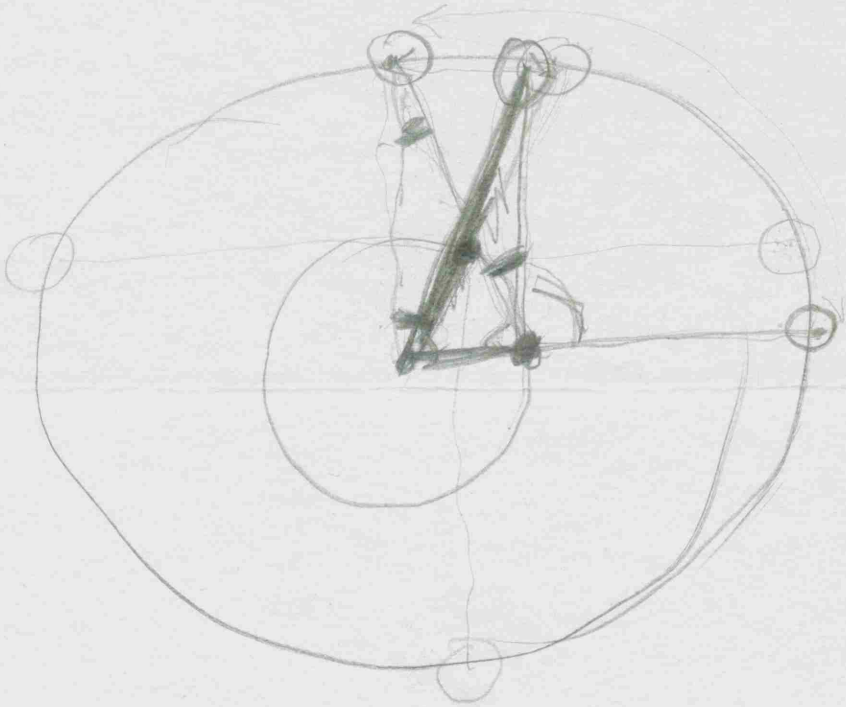
Sophists proclaimed Equality of man
(not Plato)

Cosmologists
"being" anaxagoras
bodies Eros vs Logos
space Cosmologists Homer (Hesiod)

Anaxagoras Mind* tidy Chaos
+ tidy shape
+ form

Soc relates human
Mind psyche + with i.e.
awareness of being with MIND*

$\frac{1}{2}$



$$\frac{2\pi r}{4} = 7 \text{ days}$$

$$\frac{\text{arc}}{r} = \theta$$

$$\theta r = [\text{arc}] = \text{min}$$

Eddington was not only a natural mystic, sensitive to 'the wonder of the beauty that is manifest in the world', he was a religious mystic - not in the sense of one who experiences ecstatic visions, but in the simple sense of a man who has a sincere and profound feeling for spiritual values, a man who, in Dean Inge's words, realizes "in thought and feeling, the immanence of the temporal in the eternal and of the eternal in the temporal". Albert Schweitzer has said: 'We are always in the presence of mysticism when we find a human being looking upon the division between earthly and super-earthly, temporal and eternal, as transcended, and feeling himself, while still externally amid the earthly and temporal, to belong to the super-earthly and eternal'. Eddington was such a human being.

In the age of reason, faith yet remains supreme; for reason is one of the articles of faith.[1]

We find this insistence on faith enunciated also by A.N. Whitehead: "Faith in reason is trust that the ultimate natures of things lie together in harmony which defies mere arbitrariness". It is this faith in the order of Nature that has sustained men of science in their search for truth in spite of all difficulties, false clues, shattered theories and apparent failures; it has led them to defy discouragement and to erect through the centuries the stately edifice of science which we know today, an edifice that is growing before our eyes and will continue to grow as long as thinking man inhabits the earth. But there is something deeper than the actual knowledge and of this we become aware when we pause to examine the creative urge within us. Eddington went on to describe it thus:

> The problem of knowledge is an outer shell underneath which lies another philosophical problem - the problem of values. It cannot be pretended that the understanding and experience gained in the pursuit of scientific epistemology is of much avail here; but that is no reason for trying to persuade ourselves that the problem does not exist. A scientist should recognise in his philosophy - as he already recognises in his propaganda - that for the ultimate justification of his activity it is necessary to look, away from the knowledge itself, to a striving in man's nature, not to be justified of science or reason, for it is itself the justification of science, of reason, of art, of conduct.[2]

Be adventurous in your thinking!
Sail out into a sea of golden clouds,
refresh your spirit by rising on
the wings of the wind; roll your thoughts down the centuries, into the past and far into the future and then
come back to earth with your visions
and turn again to the daily task
where critical judgment must temper
~~fancy~~ idealism producing an imaginative
practical program of action.

Auckland Geddes

Yeats: The wrong of unshapely Things is a wrong too great to be told.

Mr Jenny

Abbott July 1943

G N M Tyrrell. p. 298

a plea for a profounder agnosticism than that which at present goes by the name. but an agnosticism which by its very humility opens the door to a panorama of unlimited possibilities.

Tedious apprehension of truth — Reginald Rhind.

James wrote in 'Inside Petre' M. Petre wrote a faith and presumptions but courageous even to hardiness. To trust oneself is ... to trust God for if the light within the soul proceeds from Him, we are indeed all men the

Most miserable !!

Who that once
has seen
How truth leads on
to truth, shall ever
dare
To set a bound
to Knowledge?

Alfred Noyes

The Betrayal of Christ by the Churches.
J. Middleton Murry
(Andrew Dakers Ltd London 1940)

p.5 disciple of Wm Blake; faith in "the Divine-Humanity, the One Man, even Jesus"

p.7. Chivalry was & is inspired by Christianity...

innumerable little unremembered acts of Kindness & love which are still being performed... To be human, some will say, is not to be Christian. That is entirely untrue. To be human is to be Christian and there is no other way of being Christian

Wm Blake: Every act of Kindness done to another is a little death in the divine Image.
In as much as ye did it [consciously or unconsciously] unto the least of these, ye did it unto me

Instinctive, unconscious Christianity is, thank God, not a contradiction in terms. Its existance is, indeed the very basis of the hope that one day the whole world will be united in the universal Church. Christianity can become unconscious, instinctive, spontaneous. If it be said that these spontaneous kindnesses and courtesies were done in the world before Christ came, and are done in many parts of the world which never have acknowledged Him, these acts are not the less Christian for that. Christianity gathers up and endorses all the natural goodness of man; reconnects it with its origin and makes it conscious of its imperfection... It gives endurance to the natural goodness of man...

p.61. The virtue has departed from Christianity: ... as an institution it has no effective influence upon the world ... because it is homogeneous with the world.

p.62. Very very rarely in my life have I been certain that God was with me; very rarely in my life have I been certain that God veritably exists. I have known such moments and I live by them; but my Christian faith if it deserves the name at all, is an unending, though intermittent ~~doubt~~ struggle against a profound doubt. I do not complain of that. Far from it. My Christian faith, such as it is, includes the belief that doubt and despair are inevitable to the human soul, but that these were overcome, once for all in the death of Christ on the Cross. Out of his doubt his despair, his death, a mighty hope has grown, but that hope depends on a courage commensurate with itself. It is rarely if ever at all that I am even faintly tinged with the courage of the Christian hope. Yet the gleams of it which visit me are that by which I live. Without them my life would have been a different and much more cowardly thing ... it makes the difference between a life of which I am not, and one of which I should be, utterly ashamed.

Whitehead's 5 partial definitions of religion.

1. R. is a transforming agency — the force of belief cleansing the inward parts
∴ the primary religious virtue is sincerity.

2. R. is the art and the theory of the internal life of man — an individual not a social fact.

3. R is what a man does with his own solitariness
The transition from God the void
to God the enemy
to God the companion.
What emerges from religion is
individual worth of character.

4. Rational religion is religion whose beliefs and rituals have been reorganized with the aim of making it the central element in a coherent ordering of life — with respect to both thought & conduct.
It appeals to direct intuition.

5. R. R. is the wider conscious reaction of men to the universe in which they find themselves.

Viscount Cecil of Chelwood
D.C.L. LL.D.

It is on women with their knowledge of the practical details of life and their deep spiritual insight into its meaning that we must largely rely for the establishment and maintenance of a Real Peace.

1945.

lished the first of a series of
first such lecture to be given in
attend and any assistance you can
reciated.

W. A. Mackintosh,
Chairman of Local Committee.

Dear Mackintosh

Jamie Lyon #48
Grey & Blue Road #6
Meeting in 4th Line
"Necessity, philosophy &
religion" Hist. poem
Bob at all meetings the
Shakespeare Club"
#9
"Have an always King men
knowing their words can fill

lished the first of a series of
first such lecture to be given in
attend and any assistance you can
reciated.

W. A. Mackintosh,
Chairman of Local Committee.

Give me the splendid silent sun

swiftly I shrivel at the thought of God,
at Nature and its wonders, Time & Space & Death
But there I, turning, call to Thee O soul, that
actual Me.

Sail forth — steer for the deep waters only,
Reckless O soul, exploring...
O daring joy, but safe!
are they not all the seas of God?
O farther, farther, farther sail.

Thou matest Time, smilest content at Death

Renan Life of Jesus.

" He infused into the world a new spirit
---- The perfect nobility of the children of God

" He has fixed forever the idea of pure worship

" Jesus is the one who has caused his fellow-men to make the greatest step towards the divine

" Jesus is the highest of the pillars which show to man whence he comes + whither he ought to tend

"

USA NEA
Teachers League College
Toronto
1946 July 18.

Poland.

food conf. in London.

Holland.

Norway

Czecho Slovakia

Switzerland
Lengin - Buchenwald.
Preiss.

Comtelbaux. Jean chesneaux
madeleine Noel.
Saccha.

Apr. 7. Lv. London for Canterbury.
Dover - Boulogne, Berne
Berne
Spitz or Lake Thun -
Interlaken
~~Grindelwald~~
Lucerne.
via St Gothard Milan
Florence
Perugia.
Assisi
Rome
Naples -

9 Lv. London for Canterbury -
Canterbury
Dover to Paris
Paris
Landaue via Simplon
Milan
Florence
Rome
Naples
Return via St. Gothard to
Lucerne.
Interlaken
Havre to Southampton
May 2 - Southampton
3rd Eng
2nd Cork.

Speaking of women and the ~~The challenge of the modern world~~ present age ~~in the words of~~ Rabindranath Tagore says, "It ~~is to the woman~~ will lead her ~~woman~~ to find her place in the unlimited range of society, and the guardian spirit of the personal in human nature will extend the ministry of woman over all developments of life .... The present age has sent its cry to woman, asking her to come out from her segregation in order to restore the spiritual supremacy of all that is human in the world of humanity.

Tagore: Creative Unity. 1922.

E. Germany [illegible] Well [illegible]
Airford - no bus - [illegible] - [illegible]
Berolina Hotel -
Kassebaum -
Leipzig - 40% dead - [illegible]
Thomas ch - Bach 37 yr - [illegible]
Famous Music Sch - [illegible]
Old Sy - Reason [illegible]
Trade Fair & Mon. of the Nations 1813
Guide to Sach after Fair
Freedom will come slowly -
Weimar - Goethe - Arch. duke Carl August
70 000 Schiller Lizst, Wieland, Herder.
900 AD G. museum - library [illegible] 1000 X'tie
Guide - Marxist - wages [illegible] to [illegible]
To Baltic resort - To college [illegible] DM/mth
Dresden Bombing - shells - Elbe [illegible]
500000 Tech Univ - gestapo - [illegible]
Palaces of Saxon Kings
Meissen Police permits - Women Pict [illegible]
USSR Trade
Bratadorn talks - Porcelain
Saxony Schloss + cat, Gothic Cath
Potsdam Cecilienhof palace - [illegible]
Sans Souci - Fred the Gt - [illegible]
+ manufactures - Dr [illegible]
Sci Institutes aeronth [illegible]
E Berlin - Unter den Linden - Pergamon Mus
P. after T. of Baal - Syria, Babylon [illegible]
Paris

14 Jan 1969

Andrew Taylor 1280 Trees

Exp 70+85+
Tea 40

Newton

Lagrange said the Principia was the greatest production of the human mind.

Laplace - Newtons immortal work is preeminent above all the productions of the human intellect.

Pasteur "Try to bring into everything you undertake the spirit of scientific method founded on the immortal works of Galileo, Descartes and Newton.

Voltair "A distinguished company were discussing who was the greatest man - Caesar, Alexander, Tamerlane or Cromwell. someone answered that it was undoubtedly Isaac Newton. This person was right - for if true greatness consists in having received from heaven a powerful understanding and in using it to enlighten one self and all others, then such an one as Newton, who is hardly to be met with once in 10 centuries, is in truth a great man. It is to him who masters our minds by the force of truth, not to those who enslave men by violence, it is to him who understands the universe, not to those who disfigure it, that we owe our allegiance."

Quotation from Sir Rbt. Ball
"It is the infinitesimal calculus that has given to math. Sci. its potent grasp over some of the inmost recesses of nature. By this invention of Newton and Leibnitz, this subtle and exquisite contrivance, we attack these problems in detail".

Leibnitz - "Taking mathematics from the beginning of the world to the time when Newton lived, what he had done was much the better half."

Special Astrophysics Lectures

1. Stellar Spectra - Secchi, H.D., Stellar Chemistry.

2. Problems in Stellar Magnitude
   Hipparchus - Ptolemy - Bonn Durch - Zechner - Herschel
   m M π L Colour Index, Heat Index.
   brightness & size of focal images -
   Extra focal images.
   grid or gitter -
   Sirius B problem, diffraction images, rotating sector.

3. Problems in Stellar Temperatures - Planck. Wien & Stefan
   Effective temps
   Ionization temps. Si series
   " " for central star of planetary nebula
   Central Temps - Edd. Int Const. of Stars.

4. Problems in Stellar Mass
   Kepler - Newton. Binary Stars.
   Range in Mass 1/10 ⊙ to 1000 ⊙. cf Range in ρ.
   Edd. Radiation Pressure
   Edd - Mass - Lum. Law.
   mass of Clusters Shapley.
   " " Spiral galaxies -
   " " our Galaxy -
   " " Universe.

5. Problems in Stellar Motions
   Doppler - Radial vel.
   Proper Motion. Space Vel.
   Sun's Way Wm Herschel.
   Star Streaming
   Rotation of Galaxy.
   Red Shifts & Expansion of Univ.
   Rotation of Stars.
   Exp. & Contr. variables
   Novae.

6. Problems in Stellar Atmospheres.
   Solar atmosphere.
   Zeeman effect
   Stark effect - He. H.

7 Stellar Parallaxes.

Education for a World Adrift
by Sir Richard Livingstone

Let children and the growing generation see, hear and study that which is first class in thought, in conduct, in literature, in art – that their feelings and outlook, their loves & their hates may be rightly trained.

From A.N. Whitehead

Moral education is impossible without the habitual vision of greatness

Lt. Com. Agar US Navy.

Free men cannot discharge their duties merely by doing one job well. Every man of good will must become an active working citizen

Gen Wainwright Courage is not enough there must be goodness

Edith Cavell. It is not enough to be brave There must be no bitterness

A.N. Whitehead

Every act leaves the world with a deeper or a fainter impress of God.

(R. in making p. 159.

The fact of the instability of evil is the moral order in the world

p. 95.

V. Gordon Childe

Evil is that which is not cumulative.

Herbert Spencer

By no political alchemy can you get golden conduct out of leaden instincts.

The Body of Moses -

A few strokes from the pencil of a Holbein will give the world a portrait exhibiting such depth of character, such intensity of expression that we marvel at the ~~result~~ achievement and recognize thereon the stamp of genius. So too in literature, a few words are traced out by a master's pen, a few words only — yet to him who reads these words, a vivid picture rises instantly to the mind with a startling impressiveness never attained by the perusal of a lengthy paragraph from the pen of a ~~[illegible]~~ less gifted writer. A Dante writes of the timid-hearted

"Thy soul is by vile fear assailed, which oft
So overcomes a man that he recoils
From noblest resolution like a beast
From some false semblance in the twilight hour"

and who reading these four lines does not pause to ~~look upon~~ contemplate the picture which ~~spon~~ instantaneously has been conjured up before the mind's eye. "This is the miracle of genius", said Thomas Babington Macaulay of John Bunyan, "that things which are not should be as though they were; that the imaginings of one mind should become the personal realities of another."

Dr. David Star Jordan: "There is nothing in the universe more evident than its cosmic order..... We cannot conceive of cosmic order as existing without intelligence or meaning".....

Eddington: ".....the deeper they penetrate into the mysteries of nature, the more they become convinced that there is a power directing and controlling the universe that cannot be defined in a mathematical formula (that cannot be expressed in the symbols of science)."

(3) Herbert Spencer: "An Infinite and Eternal Energy by which all things are created and sustained.....manifested alike within us and without us..... not only the manifestations themselves but the law of their order"..... "Amid mysteries which become more mysterious the more they are thought about, there will remain the one absolute certainty that we are ever in the presence of an infinite and eternal energy from which all things proceed."

(2) Mills says: "In the present state of knowledge the adaptations in Nature afford a large balance of probability in favour of creation by Intelligence.

Dean Inge: "I believe that the chief revelation which God has granted to this generation has been through natural sciences."
"As Paley says, the marks of design are too strong to be gotten over. Design must have a designer. That designer must be a person. That pe is God."

(1) Sir Isaac Newton: "This most beautiful system of the Sun, planets an comets could only proceed from the counsel and dominion of an intell and powerful Being."

(4) Romanes: "Every structure exhibits with more or less complexity the principle of order; it is related to all other things in a universal orde This universality of order renders irrational the hypothesis of chance in accounting for the universe."

(5) Dr. J.S. Haldane: "Materialism, once a scientific theory, is now the fatalistic creed of thousands, but materialism is nothing better than a superstition on the same level as belief in witches and devils."

"A former Archbishop of Canterbury used to say, (he said it, of course, before he was made Archbishop), that it seemed more majestic, more benefiting to Him to whom a thousand years are as one day, to impress his will, once for all, on all His creatures (evolution acting by natural law), and provide for all its countless varieties by this one original impress, than by special acts of creation to be perpetually modifying what He had previously made."

(7) Sir James Jeans: "The universe begins to look more like a great thought than like a great machine.... Mind no longer appears as an accidental intruder into the realm of matter; we are beginning to suspect that we ought rather to hail it as the creator and governor of the realm of matter, not, of course, our individual minds, but Mind in which the atoms out of which our individual minds have grown exist as thoughts."

(9) Einstein: "I assert that the cosmic religious experience is the strongest and noblest driving force behind scientific research."

I. H. U. W.

Latin original: Insiste anime meus, et adtende fortiter, adtende ubi albescit veritas.

Courage, my mind, and press on mightily,
Press on where truth begins to dawn.

Courage, mon esprit, et grandement presse,
Presse là où la vérité vient poindre.

Augustine A.D. 397

Corraggio ~~mio~~ spirito mio e premi fortemente
Premi là dove la verità spunta

1. Babylonian cylindrical seal BC 3000 to 3500
shows kneeling man with foot on dragon.
origin of Gen. 3. 15 reference crushing serpent's head.
Eratosthenes identified this with Hercules

2. Assyrian stone boundary mark 1200 BC
shows Hydra + Scorpio + the
Triad of Stars (moon crescent
+ Castor + Pollux)

3. Virgil in Georgics the bright Bull opens
the Year with his golden horns.

In Homers time even it would be
The Ram not the Bull

Bull from BC 4000 to BC ~~3000~~ 2500

4. Figure of Hercules as Aratus + Eudoxus
saw it was head downwards to S hor.
+ only by going back to 3400 BC
would it be wholly to N. of Zenith
+ is upright.

5. Capricornus half goat half fish - thus on some
boundary stones is not of Greek origin though the
the Centaur with Chiron + goat with Pan
Babylonian myth Centaur built Ark at time of deluge
Origin unknown. Other any myth that Pegasus flew up
Did the Greek myth have Pegasus

ADDITIONAL BOOK BOOK No.....

McGILL UNIVERSITY

Name_____

Subject_____

Candidate's number_____
(For Matriculation Candidates only)

Fill in the above carefully.

Put the number of this book in top right hand corner.

Put this book inside first book when handing in.

~~[illegible]~~ wrote 27 Nov.

Jan

Roger Serett Jan 15
120 Midwest Rd
Scarborough Ont

Walter Johnson
111 5th Ave
NY 10003.

Abrahams
56 E 13 St
NY 10003

1957 apr. 3.

Energy -

- Bound (matter)
- Unbound (Radiation)
  - Mech. KE + P.E.
  - Magnetic
  - elect.

N no. of p. + e. in the Universe $5.1\ 10^{79}$

10^{79} (H) atoms $= 10^{55}$ gms

Mass of av. star 10^{33} gms. { Range. $\frac{1}{12}\odot$ to $1000\odot$ +

no. of stars (or star equivalent in nebulosity) 10^{21}

no. of stars in 1 galaxy $10^{10 \pm 1}$

∴ no of galaxies 10^{10} or $10^{11 \pm 1}$

av. dist. betw. galaxies 10^{6} l.y.

" " " stars in a galaxy 5 l.y.

Density of matter in universe 10^{-27}

~~" " radiation 10^{-34}~~

" of gases in stars. 10^{-7} Giant M.

1 dwarf G.

50 000 white dwarf.

" of terrestrial substances.

max. Osmium 22.5 Iridium 22 Platinum 21.5

Compression to 2/3 vol. is about the limit i.e. $1\frac{1}{3}$ lbs/cu in.

" interstellar matter 1 atom/cc.

cf. 10^{19} atoms/cc S.T.P.

Temp range terrestrial -273 — 3500° at crater of C. arc.

Stellar surface 2500 to 100 000

" interior in millions of °C.

(atomic or mol vel at 20°C 500 yds/sec.

at 40 million° 100 mi/sec

" interstellar space. 3° A Selective radiation temps to many thousands °C

from Creative Evolution.

Henri Bergson.

Modern Science is the daughter of Astronomy; it has come down from heaven to earth along the inclined plane of Galileo, for it is through Galileo that Newton and his successors are connected with Kepler.

Miscellaneous Data.

McGill University

MACDONALD PHYSICS LABORATORY.

MEMORANDUM .....

TO ..... FROM .....

Solar System

Sun	800 000 mi -diam			
	Prominences Ca 9000 mi			
	Hα 20,000 "			
	Dist from Earth 92 10^6 mi			
Mercury	2700 mi diam		Year.	Satellites
	36 10^6 " from Sun		87 dy	0
Venus	7500 " diam			
	67 10^6 " fr. Sun		224 dy.	0
Earth	8000 " diam			
	92 10^6 " fr S.		365	1 Moon 240000 mi distant. $\frac{1}{81}$ mass of Earth light comes $1\frac{1}{6}$".
Mars	4000 " diam			
	141 10^6 " fr S.		687	2
Jupiter	87000 " diam			
	483 10^6 " fr S.		12 yrs.	8
Saturn	76 000 " diam			
	886 10^6 fr S.		29 yrs	10
Uranus	30 000 " diam			
	1780 10^6 " fr S.		84 yrs.	4
Neptune	33 000 " diam			
	2790 10^6 " fr S.		165 yrs.	1

in Seafarers Golden Argosy
200 mph

Vel 100 m. p. h.

1c. 2400 m. p. dy.

1.	Round earth at Equator	10 days.	5 dys
2	t. Moon	100 day	50 dys.
3	Sun	106 years	53 yrs.
4.	Saturn	1000 yrs	500 yrs.
5.	Neptune	3000 yrs	1500 yrs.
6	α Centauri	$27\ 10^6$ yrs.	$13\ 10^6$ yrs.

Vel. of light

1. to Sun - $8\frac{1}{2}$ min
2. α Cent. - $4\frac{1}{3}$ yrs.
3. Arcturus - 47 yrs.
4. Polaris - Time of Drake to present
   Crusades to Drake.
6. Edge of Milky Way 30 000 years.
7. to Andromeda Neb. 900 000 = 10^6 a/p.

Scale

Diam of Sun 800000 mi = 10^6 mi	- - - -	1 inch
Diam of Earth. 8000	- - - -	$\frac{1}{100}$th inch
Dist. Sun Earth 10^8 mi	- - - - -	100 inch = 8 ft.
Dist. Sun t. Neptune 3×10^9 mi	- - - -	3000 in = 240 ft.
Dist. Sun to α Cent. 10^{13} mi	- - - -	10^7 in = 100 miles.

Early astronomy :- positions, apparent motions
Babylonians &c. eclipses, etc

Superstition, mythology, alchemy – astrology

Greek – advances in math, philos. etc.

Aristotle 300 B C ? 4 elements + 1
Ptolemy 125 A.D.
Copernicus 1473 – 1543
Galileo 1564 – 1642

Tycho Brahe 1546 – 1601
Kepler 1571 – 1630
Newton. 1642 – 1727

Fraunhofer 1814
Kirchhoff 1859

Huggins
Draper 1872
Mrs Cannon

What spectroscope reveals :- elements. phys. cond'ns motion, systems.

Modern astron & astrophys. give a picture of Universe
What is a star ?
It Immensities of Space – Then not solar syst
give scale.

Our Stellar Galaxy – Slides. Cygnus
Sag. + Scorpio
α + ρ Ophiuchi
Orion

Mag. Cld. 100,000 ly
Clusters 20 000, 50,000 ly
Island Galaxies Spiral Neb.

Castor : α', α'' possibly P = 300 yrs.

α' spec. binary P = 3 dys.

α'' " " P = 9 ".

Sirius A, B 50 yrs. = P.

A 5 × ☉ mass.

B $\frac{1}{6}$ mass of A + $\frac{1}{10000}$ Brightness.

ρ = 1 ton/cu. in.

Betelgeuse 10^{-6} of our ☉ much less dense than our atmos.

Vol. = solar system out to Mars.

Mass more than 10 × ☉.

— Perseus Cluster

Orion

Ophiuchus Lanes.

Cygnus 1.

" 2.

Shakes. Look how the floor of heaven is thick inlaid with patines of pure gold.

— Pleiades

Taurus

Ophiuchus

Nrs. Maj. spiral

Tenny Many a night I saw the Pleiads rising thro the mellow shade Glittering like a swarm of fireflies tangled in a silver braid

6 naked eye stars

— we have "Come on that which is + caught
The deep pulsations of the world
Aeonian music, measuring out
The steps of time"
— and space.

Space.

Both Time & Space are baffling & illusive mysteries To every one of us who thinks about them We feel that we know what we mean by these terms – but definitions are difficult & incomplete To the philosopher in one way, to the scientist in another, to the artist & the poet in yet other ways, Time & Space are a challenge.

Read Aud. Pres. Address p. 85 (1945)

The geometer – Euclidean space,
non Euclidean geometries –
1) Expanding universe – Lemaitre
2) Steady state universe. Jord an Bond & Hoyle –

Read Lovell's – Reith Lectures. BBC – CBC.

SLIDES – Mans expanding ideas of Space.

1 – Egyptian Universe
2. " symbolic universe
3 anaximander 600 BC
4 Ptolemaic. 150 AD
5 – Hildegard of Bingen 1170
6 Einsheim meteor – credulity & superstition
7. 16th Century engraving – shepherd
8 Copernicus d. 1543
9. Galileo d. 1642
10 1610 telescope
11. Kepler d. 1630
12. Ellipses (Halley's & planets' orbits)
13 Planets orbits –
14 Newton 1642 – 1727
15 1672 Tel.
16. Newtons monument – W. Abbey. who surpassed all the greatest of humanity
17 – Newton – Trin. Col – the marble indeed – –

18 Nov. sky - Pleiades (7)
19 Maestlin's " (11)
20 Galileo's " (36)
22 Hertzsprung " (2616)
23 40" tel
24 Yerkes domes
25 Mt W
26 Mt Palomar
measuring distances in space.
survey triangulation
27. heights in atmosphere survey aurora
survey to artificial satellites
usek 1200 to 1800 mi atmos
merges into interplan. medium
see Sky & Tel. May 1959 p. 379.
28 Bessel - 1st stellar ||x
29. Nov. N sky - see pos^n of 61 Cygni.
α Lyrae.
δ Cept.
30 clusters
31 Feb - S. Sky. Sirius 8.8 l.y.
Betel
Rigel 600 l.y.
32 Orion Constell^n nebulosity
33. Horsehead
34 Cygnus wisps
35 Mt Palomar 48" Schmidt
36. " " 200" shadow cone
37. Milky way. 15 (3 n.e. stars)
38. galaxy distub Kapteyn
39
40) C-g.

41 Plaskett's model
42 M 31
43 Spiral arms - H 21-cm λ
44 M 33
45 2 galaxies
46 M 51
47 group of galaxies
48 negative of intermingling galaxies
49. Jodrell Bank.
50 Mills X
51 Einstein + de Sitter geometers of space
52. Eddington
53. Einstein + Tagore

Reverence in the face of the beauty + majesty + mystery of the universe.

Life is a constellation - an unplumbed deep, strewn with starry moments.

The Poets are challenged by Space.

Robt Bridges Spacious as the starry firmament inescapable infinity of radiant gage that fadeth only as it outpasseth mortal sight.

Black Sea

Euxine - "very hospitable"
so called as a euphemism
bec. it could be so rough &
forbidding

Turkey, Romania, Bulgaria, USSR.
720 miles E to W. 350 N-S.
Central depth 7,000 ft
40 rivers — Danube, Dnieper, Dniester
Bug, Don.

Sea of Azov to NE
Bosphorus, Sea of Marmora
Dardenelles & Aegean Sea
to Mediterranean to W.

Cities: Varna, Odessa
Sevastopol: Yalta, Novorossi
Taupse, Sochi, Sukhumi
Batumi, Trebizond, Samsun

Trebizond: Greek colony
400BC Xenophon & Ten Thousand reached the sea 400BC circa
1204 Capital of Empire of T.
Turks captured it 1461.
Armenian raids & massacres
Russians captured it 1916.
Turks recaptured it 1918.

Xenophon 430-354 B.C.
joined Cyrus expedn
to fight his brother Artaxerxes.
On death of Cyrus, great
5 mos retreat of 10,000 to
Trebizond & by sea home.

Orpheus & Gk Religion
(Orphic Movement)

WKC Guthrie MA
Fellow of Peterhouse
Camb. 1935

Methuen

BL
820 07G8

P182/1
c.
2 BC - 4 AD

Art of
Orpheus -
Zerfass

BL
820
07L7

Hymns
at BC-AD
period -

QQ LXXVIII-4.
1971 Wanlin.
a Cen Observatory.
Mary
Pat.
Jack Heard (3)
Librarian U. of T (2)
" Queens (2)

Dr E M Lindsay
Armagh Observatory.
Dr A G. Thodey
Science museum
S. Kens.

Lt. Comdr H D Howse
Nat Maritime Mus
Greenwich.

H. Dingle
M. Law.
Director Meteorological Office
Bloor St.
Alecx Crichton.
T Inglis Moore

Specialized Agencies &c

Trust Territories - Somaliland (Italian) (1)
Togoland (adjacent to Gold Coast)

UN Technical Assistance
(60) closely integrated with Colombo plan - in this booklet pp 26, 28 f, 35 & (2)
& Unesco Tech. Ass -

UNKRA health, edn, irrigation, industries, fishing (3)

UNICEF } 80 countries (4)
WHO } example India. Malaria. TB. (5)
FAO } (6 p.6,7)

ILO (70) studies & experiments reducing (6) p. 4
factory accidents & waste.

(6) p. 8

UNESCO - (72)
Ed^n
Sci
Soc. Sci
Cultural Activities
Mass Communications
Tech Ass -
Exchange of Persons.

Yeats: The wrong of unshapely things is a wrong too great to be told -
I am not some at least of the wrongs of unshapely things the UN &c
This is a great record of service to humanity.
In a world where there is much politically to dishearten us it is stabilizing to ponder over all that is constructive & good. Evil is unstable & it is our faith that the ultimate end is good. Whitehead: The instability of evil is the moral order of the world - and all who are engaged in these great humane tasks are "co workers with the living God."

For CIIA. Jan. 1959.

Introd.: I.A.U.

1. The System — Contrasts — Shortages - Posters
Conference - Hotel - Leningrad & Moscow - Kremlin
Hall of Pillars
Opening session

2. Ambassadors refs to K. Borg.
& to ex-Canadians

3. Poles - Poznan astronomers - & Odgers account,
Kiev
Georgian physiologist.
Samarkand report

Writers Albert Motty
Howard Fast.
[Shapley says pro-Comm]

4. No criticism's heard. Gerasimovic
Pasternac

5. Housing

6. Respect for Art treasures.
Friendliness - Leningrad tram, Moscow police, Georgia old woman
Efficiency of Intourist interpreters & guides.

7. Actual & Reported benefits of Soviet rule.
Research institutes. skills 41" leases.
Monkey Park
Housing - Parks. Statues of youth
Sanatoria + Holiday resorts Yalta - Bot. Gardens
Education Georgia more P.S. teachers than Grade school ch. 1917 Georgia " "
Irrigation, mulberrys + orchards
Yerevan - Public Bldgs.

8. Military 9. Religion Pirs Mur

1. Contrasts
2. System - Officials -
3. Housing
4. Education
5. Turkish frontier
6. Micro Mir
7. Moscow Exhibition & Satellites & at Energy + L. + H industry
8. Propaganda posters
9. Pole, Kiev, Georgian
10. Religion
11. Wages & Prices

Helsinki - Leningrad	200 miles
Leningrad to Moscow	400
M - Yalta	
to Kharkov	400 } 750
to Yalta	350
Yalta - Sukhumi	400
S - Tbilisi	250
Tbilisi - Yerevan	150 +
	2150

Yerevan - Rostov	500 +
Rostov - Moscow	600
Moscow to Helsinki	600 -
	1700

Total 3850 miles

Little White Calf.
pp 1-43.

Montreal, Cambridge and the Antarctic
pp 1-36. 1919-22

In the hands of
Roy H. Barraclough.
370 Glengarry Rd.
Kingston. Ont.
Phone 542-1806.

29/3/78.