

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

He never does any thing which
he does not want to do -
not if he can help it.

"Cobwebs in the purse" 19

To be a true museum man
but it certainly helps —

you don't have to be crazy,

Religion according to Whitehead is
"what the individual
does with his own solitariness"

is "what the individual

Mathematical teaching is a fun of two variables,
and the pupil. — Klein

the subject

just by feel

Physics "going behind" Chemistry in attacking problems concerning ^{chemical} structures

It is like throwing bricks at a raven at night — Einstein
referring to chance of head-on collision betw. nuclei.

Discovery Feb 1944, p 63 Indian Science Congress meeting in Delhi
resolved itself into a meeting of the Royal Society!

Blaise Pascal & La Bruyere remind us that the troubles of humanity
w'd have been diminished & help at least had men & women
ever been content to sit by the fire with a book —

A craftsman is proud & careful of his tools; the surgeon does
not operate with an old razor-blade; the sportsman fusses happily &
long, over the choice of rod, ^{gun,} club or racquet. But the man who is
working in words, unless he is a professional author (and not always
then), is singularly neglectful of his implements. He does not realize that,
in many cases, the fewer the words the more forcible their impact —

Irving Brown in Just Another Word.

It is a solemn thought that almost no one — if he is truly eminent —
knows what he means; Look at the great ones of the earth, the politicians.
We do not discuss what they say, but what they may have meant when
they said it. — Sir James, 'Barrie.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

you can say anything you want, but you gotta be careful with words —
Duke Ellington

Maxwell's demon belongs to the 2nd order of impossibilities (not 1st order
as in Pre-Planckian days)

— which ~~it~~ is where we come in

Sam Weller's Knowledge of London was "extensive & peculiar" —

He asked no quarter: he gave none —

Not a first introduction to new comes, but rather a "repetitorium"
— Schroedinger.

The young mathematician after having been induced to visit
Sixtine, and having seen the ceiling... "Not so bad. But if this

chapel and all its paintings crumbled to dust - - - 's (reference
to himself) uniformization theorems will still stand. —

This little vol is not an ordinary text-book, dignified, dull
and well-printed (hence expensive), but an informal communication
of ideas, fascinating, amusing and only hectographed (and hence cheap).
— Born reviewing Schwedrig's Statistik
thermodynamik

"Neophobia" = Fear of the new.

"The wind of genius bloweth where it listeth"

Be ye doers of the word, and not hearers only, deceiving your own selves —
Bible

Blessed is the man who has found his work — let him ask no further
blessedness — Carlyle.

The sole order of nobility which, in my opinion judgment, becomes
a philosopher, is the rank which he holds in the estimation of
his fellow-workers, who are the only competent-judges in such
matters. — T. H. Huxley.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

Kitchen describes his book (From Learning to Earning) as a simple account of a small scale expt. for assisting youth in its dangerous crossing over no man's land between school & work, and he hopes its realism may prove a refreshing contrast to the chorus of reconstruction programmes now emanating from the idealists —

Although as many women as men do post-graduate work in astronomy with quite as much success, yet the total no. of women engaged in astronomical research is small because most of them become astronomers' wives instead of astronomers — Natic.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

Very fine wire of steel or tungsten 10 times stronger
for its size, than are girders: because of greater
flaws in the latter. An automobile, if constructed
of material as flawless as a wire, would weigh only
300 lbs, instead of a ton + a half, as at present.

"Aerogel" compounds: moisture or gas absorbers
Compound of innumerable minute bubbles like foam
Density .05, 10 times lighter than cork.
Tube nearly as strong as solid rod, + bubble as strong as
grain

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

.....19

When dry ice pressed against a conductor, evaporates & forms a gas cushion which insulates the ice from the conductor; cushion falls, more evaporates & pushes it back & so on. Cycle is repeated 1000 to 10000 a sec. Heard as a squeak; ~~this~~ ^{thing} can happen only with conductors or semi conductors of heat.

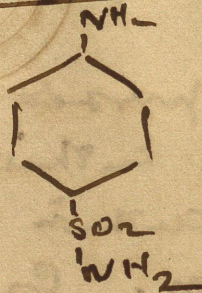
? } Natural Diamond & Pearl produce squeaks; not so
imitation stones: Quartz not glass
~~the~~ Discovery attributed to Mary D. Walker of London.
century for "Nature"

65" electric "stevedore" — magnet — an
15 tons ^{of iron} _{at} a time

Parontosil
"Sulfanilamide"

p-aminobenzenesulfonamide

Sulfa Drugs



Prepared by Gerhard
Vienna Inst. Technol.
1908 thesis:

Dr Gerhard
Domagk of one of
the I.G. pathologists
recognized its
bactericidal potency
& was awarded the
Nobel Prize.

Sulfa pyridine
" thiazole
" diazine
" guanidine
" pyrazine

Misc. Sc. notes.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

Sc. Am. Jan 1942 p. 11.

Butyric acid as small as 6 parts in 100 billion can
be detected by the nose by its smell is 6×10^{-11}

Gasoline production in America at the end of 1941 = 45×10^6 gals/yr.

Highest temp recorded in the shade: $136^\circ F$ in Azizia in Libya

It will require 8×10^6 gally tons to propel Queen Mary.

Production of static elec. charges in V belts:

p. 19.

Advertisement of "Alnico" magnets  strong enough to

p. 40

balance in mid air $7\frac{1}{2}$ oz piece in a soft iron yoke
can lift 30 lbs if in contact with a polished surface.

Sc. Am. Feb. 1941

p. 77 During the great magnetic storm of Apr. 1938
 2×10^9 K Watts ~~was~~ energy was expended for a
 two-hr interval.

p. 103 Colon blind flyers are in demand now: they
 can see through camouflage!

March 1941 p. 153 Ferromagnetics used in telephone receivers,
 radio loud-speakers, all electrical systems that light-
 on lamps, run our motors, etc.

Fe, Co, Ni the big three: $\text{Eqd. } 4^{th}$

Ferromagnetism a cooperative phenomenon: of beta
 electron spins with atoms, beta atoms in a group, and
 beta all the groups in a mass of material.

p. 154 Existence of domains in a ferromagnetic body

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics

210 BOW-BAZAR STREET
CALCUTTA,



.....19

Sc. Am. March 1941 (contd)

demonstrated by dusting the iron filings on the surface of an unmagnetised ferromagnetic body & examining under the microscope. A photograph of the pattern observed is shown in the fig published on p. 154.

p. 155 A change in only 8 or 9 molecules of the visual purple in the retina of the eye is enough to produce the sensation of light, according to Hecht: i.e. 8 or 9 quanta of light.

p. 170 + Feb issue p. 103. Reverse cycle refrigeration for providing heat.

Sc. Am. April, 1941

p. 203 Electrical clocks wh keep time correct- to $\frac{1}{10}$ sec.
a year are known.

p. 203: When there is an atmospheric depression, about
 2×10^8 tons of air removed elsewhere: we
can control the weather only when we can stop
such a mass from going its own way.

208: ~~paint as thin as $\frac{1}{1000}$ "~~ thickness of paint- on
ferromagnetic material (as small as $\frac{1}{1000}$ inch) can
be measured by magnetic methods.

217 "It is an old maxim of mine that- when you have
excluded the impossible, whatever remains, however
improbable, must be the truth" - Sherlock Holmes.

p. 216 Read H.V. Russell's Inside the white dwarfs.

5

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics

210 BOW-BAZAR STREET
CALCUTTA,

Sci. Am. Apr. 1941 (contd.)



p. 220. A 23 ft specimen of "fossil lightning" known as fulgurite is in the Geological Museum of the Univ of Chicago. When lightning strikes into siliceous sand, such as is found in sand dunes, heat from the elec. spark causes the sand particles to melt and fuse into a long, snakey tube, composed of a dark grey substance like glass.

p. 224 one 100 w elec. bulb gives same light as six (bulbs 25-watt)

226 Photo elec. cell used for automatic switching of the street lights: switched off when the natural light is above a certain predetermined intensity, and switched

on it - falls below that level

p. 236: By magnetically suspending a steel ball ^($3/32$ " diam) in vacuum so that friction was nearly eliminated, L. E. MacHattie of Virginia Univ. was able to spin the ball at a speed of 110,000 revs per sec. A rod $3/16$ " diam & $7/8$ " long could be spun at 36,000 revs per sec. U-235 can be separated from ordinary U by spinning at 66,000 revs/min i.e. 1100 per sec. But - according to beans it will have to be several inches in diam.

Sc. Am. May 1941 p. 267 A 40-w fluorescent-lamp is 3 times as efficient as ^{an ordinary} 60-w filament-lamp.

Aristotle's advice to Alexander the Great (to boil his water & to bury his dung)

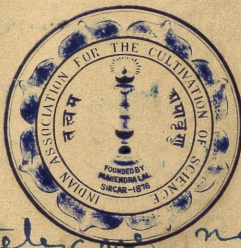
7

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics

210 BOW-BAZAR STREET
CALCUTTA,

Sc. Am. Aug 1941 p. 74



.....19

40 centuries before telescopes made greater precision possible
ancients able to orient a pyramid true north within
3 min 23 secs of arc! i.e. to 1 part in 1000(?) Ordinary
Engineer's transit are accurate to 1 min.

Now, good digestion wait on appetite,
And health on both!

Once the title of a series of lectures by Sir W. Bragg
On the "imperfect crystallization of common things" reported
in one daily paper. "Civilization" " " " "

When on one occasion another professor, after trying to persuade him to accept a theory he had propounded said "At least you must admit there is something in it." Derrin replied "My dear —, it would be difficult to propound a theory that was entirely false"

Tungsten, Ni, V, Cr + Mo are 5 elements held in high places of importance in steel industry.

Kodak Maximum Resolution photographic plate can resolve 1200 lines per mm. ^(30,000 to 1/4 inch) This limit not set by the coarseness of photographic emulsion in the plate but by the imperfection of the optical parts ~~capable of~~ used for photographing these lines, over a reasonable area. ~~can be used for photographing~~ Such photographic scales can be used as micrometer eyepiece scales. ^{Width of human hair}
= $\approx 1 \mu$ (See advertisement facing contents page ^{human Nature})

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

.....19

~~At~~ Apr 18 1942.)

Nature Apr. 18 1942 p 425 bottom: ~~teacher~~
inimical way, for inimitable

in Reviewing Briggs's book
"on his own

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

From Eddington: obit.
notice of Larmor in Nature 145,
631 (1942).

Larmor, senior wrangler in 1880, J.G. being second.
1903 took up Lucasian Professorship, vacant through the death of
Stokes: famous chair of Newton.

Great wave of expansion of phys. Sc in mid Victorian times
in which Maxwell, Helmholtz, Stokes & Rayl. + others took prominent
parts. Larmor + Lorentz the transition physicists.

Sc. writers nowadays have to bow down to the prejudice which
does not allow the ether to be named, and are obliged to use
a paraphrase; but the "resonators" & the "partials of in - ve
energy levels" now employed to fill the ~~space~~ space where the
ether used to be, expose the error of those who thought that the ether

had become unnecessary.

From the apt given in Whittaker's "History of the Theory of Heat & Electricity" it appears that the well-known Lorentz formula was originally given by Lorentz in the form of a 1st order approxⁿ, afterwards extended by Larmor to the 2nd order, and finally shown by Lorentz to be exact. It is in the 2nd order effect that the contraction is found (the suggestion of contraction was a brilliant-guess proposed by Fitzgerald to explain the results of Michelson & Morley), and it was Larmor's contribution that directed it. It is not the paper if we speak of "Lorentz transform" & the Fitz-Larm. contraction.

Ordinary titanium ^{oxide} pigment is in form of anatase. Recently prepared in the form of rutile, which has a ~~crystal~~ ^{crystal}lographically a more close-packed structure & hence ~~is a~~ (?) has a better covering power.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

.....19

Naturalist : Lord Kelvin's designation of students of natural science.

old adage : God sends the food, but the devil sends the cooks.

Hercule Poirot or Lord Peter Wimsey will envy etc.

"Elementary, my dear Watson"

Interesting example of a false clue leading to correct result - small disagreement - both the at wts of H determined by chemical methods and by mass spectrograph led Buge & Herzog in 1931 to postulate ~~the~~ the existence of a heavier isotope of H. They analysed that the discrepancy was within the limits of crystal error, started his famous expts on the concentration of the heavier isotope.

1642 famous as the date of Galileo's death & of Newton's
birth: Scientific societies springing up in Florence, London
& Paris. "This is the age" wrote Pove "wherein methinks
philosophy comes in with a springtide".

"The continuing ferment in his (white heads) ideas
has interfered with their bottling".

Science and the citizen are still insufficiently acquainted
with one another

~~As~~ Industrial leaders more often owe their positions to their
commercial and financial ability than to their technical ability. In
industry scientific men are too often regarded ~~as~~ rather as experts to
be called in when there are troubles, not as colleagues to be called in
when making plans. — W. L. Brass.

The strange oversight which excludes from the Board of ^{Governors} ~~Directors~~
of the B.C.C. a representative of the profession which brought the radio
into being — ^{C.D.} Darlington

He wd solve high dispute with conjugal caresses — Milton

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics

The "Home" programme of the I.A.C.S. at present includes 7 hrs of religious broad casting a week + 20 mins of Scientific. The times



programme 1 $\frac{1}{4}$ hrs of religion + no science at all. 19

210 BOW-BAZAR STREET

CALCUTTA,

19

As so many people tend to forget the scientific approach and the artistic approach must be taught concurrently for the full understanding and appreciation of natural phenomena.

The cultural value of Sc. is in its development of a spl kind of thinking as it is this some acquaintance with this "scientific thought" which is wanted in the education of normal citizens rather than the teaching of factual knowledge about Sc. It should be the aim of edu to develop also this kind of thought which is necessary for a fully developed personality: the thinking needed for an appreciation of the arts, the thinking trained by a study of the language, the thinking which reveals itself as wisdom in the affairs of life itself. It is in a truly balanced edu of this kind that Sc should play its part.

Silgalahad "With manly grace, yet maiden meekness in his face

Naming "shd be an act of intelligence; frequently the emotions are engaged, as when a baby is named, or a football referee is addressed by a dissenting crowd." -

Reviewing the extraordinary record of the Sturwe family in Astronomy (on the occasion of award of the Gold medal of the Royal Astr. Soc. Prof. Helmer the President reminded his hearers that the Gold Medal had gone to a Sturwe 4 times in 118 years, one in each generation. in 1826 to Wilhelm S, great-grandfather of the present medalist for his work in discovering and measuring double stars. in 1850 to Otto S his grand father for his investigation of the ~~Sun's~~ Sun's proper motion in 1903 to Hermann S, his uncle, for his work on the satellites of Saturn; & now in 1944 to Otto S the II for brilliant work in astrophysics, younger sister of the

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

classical astronomy to which the family had made such striking contributions —

In notes taken by Willard Gibbs of Quincke's lectures appears a list of recommended literature, ^{which} among ~~the~~ others contains the citation — Beer not recommended — Confusion the Physicist Beer with a well known beverage, Miss Rutledge (Gibbs's biographer) writes "This is the 1st personal mention. Quincke undoubtedly had a word to say about drinking to all of his 1st-class, many of whom wd go on to Weierstrass, who among champion

drinkers — and Germany was populated with champions —
still was famous. — C.A. Kraus J.A.C.S. reviewing R's book.

I believe ^{that} there is no philosophical high road in science,
with epistemological sign-posts. No, we are in a jungle,
and find our way by trial and error, building our road
behind us as we proceed. We do not find sign-posts at
cross roads, but our own scouts erect them, to help us
rest. — Max Born Expt. + Theory in Physics.

I do not wish to discourage any (body) who feels in
himself the vocation to embark on so adventurous a
journey. — M.B.

I am far from attacking Eddington's theories or
from doubting his results. If they should turn out to
be right — I shall rejoice. But I shall not attribute
this (possible) success to E's philosophy, as a doctrine which could
be followed by others, but to his personal genius & intuition — M.B.

It is a funny thing about life — if you refuse to accept anything but the best, you very often get it — Somerset Maugham

She is a sham-talker.

An orchid face with a cactus tongue
Many people have some sort of religion — at least they know which church they are staying away from — John Erskine.

In a U.S.A. circuit court adultery labelled "Not government property. Please do not take away"

Who: a person of ~~prominence~~ prominence; as one of the whos in who's who — Webster's Dictionary

as a group the scientists are the oldest, ~~is~~ as judged by the entries in who's who —
the optimists in Italy say "we are going to lose this war", and the pessimists ask yes, but when?"

"up to his ears"

can not be expected to pull other people's chestnuts out of the fire —

Even when he talks about me he looks me

He was a leader of men and a follower of women

When she walks her whole figure makes eyes at you

She has everything that credit could buy

Attractive to the omphal degree

A woman's mind is cleaner than man's — she changes it more often

INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

K. S. KRISHNAN, D. Sc.

Mahendralal Sircar Professor of Physics

210, BOWBAZAR STREET,

CALCUTTA.

He was listening out of the corner of his mind.

That man has no right to make himself so small - He is not that big
Hungry people live longest, if they are not too hungry. A diet ^{Mann} that
contains all essentials, in reduced quantities is, next to long lived
ancestors, the greatest aid to longevity.

193

Eat what you ought to eat first; then eat what you want to
eat - but not too much of it

God was bored with him (Napoleon) - Victor Hugo

If Custer were still alive, he would be proud of the way he died -

"We fix flats": Advertisement of a new type of brassiere
These publicity stories are terrible. Half the lies they are telling
about me aren't true -

I am not embarrassed at the audience's looking at their watches,
no, not until they start shaking them - Erskine
Winston Churchill, his cigar jutting from his face like a gun from
a turret - Time.

The kind of guy who wd marry Hedy Lamarr for her money.

He was the low-life of the party

A platonic friendship - play for him and tonic for her.

A woman's first wish is to be weighed and found wanting.
Her dress shows everything but good taste.

The way Shaw believes in himself is very refreshing in these
atavistic days when so many believe in no God at all - Zangwill

Cripps referring to the ruling class "they pay me fantastic sums
to get them out of their difficulties, but I have no hesitation in
saying that the working class of this country are more capable of ruling
them than they are."

The virtuous man contents himself with dreaming what the wicked
man does. - Plato

I have only met her twice, but we dislike each other as if we
had been friends for years.

She climbed the social ladder; lad by lad.

It's correct, but isn't right.

I don't dance, but I would love holding you when you do

The deadly sins are really major errors in the technique of living.
A refugee Professor speaks in English with that required precision which shames the native born
at a restaurant "I ordered for figs and cream" but this is figs with cream." when the
waitress did not see the difference "Madam, wd you say a woman and

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics

210 BOW-BAZAR STREET
CALCUTTA,



18th Apr 19

child were the same as a woman
with child?

of Bernard Shaw: He had discovered
himself, and gave ungrudgingly of his
discovery to the world. - H. H. Munroe.
He weighs a hundred and plenty.

In Walter Scott's Book-Plate: -
And please return... I find that tho' many
of my friends are poor mathematicians, they are all
good book-keepers.

A well-bred man, according to Oscar Wilde, never unintentionally insults anybody.

President: "Any more questions? "What time is it?"

"I wish to thank the management for so generously providing 2 speakers
for this evening; one for this end of the hall, and another for that"

Plattner: one who says things up to your face that he wouldn't say ^{back} behind you.

Bigamy is having one wife too many; monogamy is the same.

Marriage is not a word but a sentence [long term sentence?]

The only way any woman may remain forever young is to grow old gracefully.

Liberty is always dangerous, but it is the safest thing we have.

Don't tell your troubles to ones. Most of them don't care a hang; and
the rest are damn glad of it.

Every man has a right to be conceited until he is successful - Disraeli
Happiness is not a station you arrive at, but a manner of travelling.

What do the robins eat - mummy?

Worms dear.

And what do the worms eat - ?

The dead robin's darling - Stephen Leacock.

You look sweet enough to be rationed

America + England are two countries separated by the same language - G.P.S.

Danton's motto: De l'audace! encore de l'audace! toujours de l'audace.

That reinvigorating humorously described as "cutting the leaves and smelting the
paper knife"

Being accustomed to a good deal of vice.

Those who have not dropped their educational blinkers

Jump to the eyes

Talking care not to tread on anybody's toes.

To this last sentence there hangs a tale.

"Well, how did you like it?" "Oh, I love it pretty well."

We must not turn out the landlords, but tax them out.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

.....19

Deliberation was nearly always under a 'smoke-screen' from
his inseparable companion, his pipe.

Distinguished betw mere inexperience & definite incompetence.

Not easily digestible for the weak

Popular without being superficial, and scientific without being
dull or pedantic —

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

It therefore resolves itself into a contest "Cepheids versus the Post" - Eddington
the Anatomy of a comet.

"Observations without speculations + speculations without observational facts
to back them, will never get us very far towards the solution of our problems -

Road sign "Men at work; pass at your own risk"

The lovely lady is beginning to look as if someone cared for it -
Her face is her fortune; it runs into a nice figure -

The physicist, like the poet, is born and not made. Neither can he
be produced on demand by any system of training - W. L. Bragg.

Limited no. with a real flair for research
Fundamental distinction between education and training
The real spirit of the research physicist is with the
creative artist.

the polemics of the tub-thumper

To make bricks with the straw that we have,
the creaking of the joints so audible.

"The things that are seen are temporal, but the things
that are not seen are eternal". New Testament?

It is a tribute to the greatness of a philosopher that he
compels his successors to refute him — Hegel.

The British and the Americans are alike in what they
both believe, wrongly, that they speak the same language — American
Broadcast

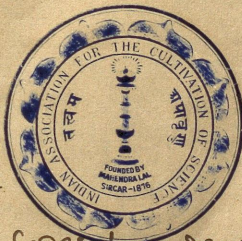
"The book is not all easy arm-chair reading, or is likely to have
a wide vogue among tired businessmen" — G.H. Hardy.

Do you think one who has known how to live honorably for 80
years does not know how to die for a quarter of an hour?

Mark Twain who travelled in India in 1896: ^{Anne de Montmorency} The 1st class
passengers are made to the guard, the guard is made to the 3rd class
passengers, and the 2nd class passengers are made to one another.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

To check quickly whether the
line of a slide ^{with cursor} is accurately at
the line to the scale: Test the correspondence of a no. + its sq; if 'log-log' scales
are available, being further apart, test more sensitive. 1.55 + 80.0 are
almost exactly opp each other & may be used for the test. The error being
.013 mm in a 10" scale is negligible: - Ashley Nature 150, 379 (1942).

"To keep the wolf from the door" || Unashamedly parochial
His strip chef-d'oeuvre

"One must be a little mad to get anywhere. One can't advance without
overbalancing" - Haddon (the anthropologist)

"The man on the job knows most, the Director of Research very little,
the Committee of Vice-Presidents nothing at all" - C.M. Mees.

It is a truism to say that the solution of a problem which
puzzles those who are constantly working on it is often grasped quickly by
new comers - viz P. Jankovics

He wields a stout lance, and if he sometimes tilts at a windmill it may be because he has reason to suspect - ~~Conolly~~!

David Sarnoff President of the Radio Corporation of America (RCA)

Most people dislike vanity ~~of~~ in others, whatever share they may have of it themselves; but I give it quarter wherever I meet with it, being persuaded that it is often productive of good to its possessor, and to others that are within his sphere of action; and therefore in many cases it wd be altogether absurd if a man were to thank God for his vanity among the ~~other~~ comforts of life. — Benj. Franklin.

B. Franklin snatched the lightning from the sky and the sceptre from Tyrants — Turgot.

Kant said of Franklin that he was a new Prometheus who had stolen fire from heaven.

In order to secure my credit and character as a Tradesman, I took care ~~to~~ not only to be in reality industrious & frugal, but to avoid all appearances to the contrary. I dressed plainly; I was seen at no place of idle diversion; I never went out a fishing or shooting;

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

.....19

a book indeed sometimes debauched me from my work; but that was seldom, snug, and gave no scandal; and to show that I was not above my business I sometimes brought home the paper I purchased at the store thro' the streets on a wheel barrow. — B. Franklin.

might well be used as a text book in a young ladies' finishing school. Old trees can not be safely transplanted — Franklin

The condescending spirit with which the aristocrat accepts the brilliant parvenu —

A producer, not a consumer (not an aristocrat)

For modes of faith let greater souls fight.

He can't be wrong whose life is in the right. — Alexander Pope.

Lamb in Essays of Elia "The Old Benchers of the Inner Temple"

"Jackson - the omniscient Jackson he was called - had the reputation of possessing more multifarious knowledge than any man of his time."

To Bowdler we owe the picture of Sir John Pringle & Franklin at a chess board, Pringle very soon, Franklin all jollity and pleasantry. A prime contrast - acid & alkali. -

Six weeks of the densest happiness I have met with in any part of my life. - Franklin

There is a certain exotic quality about F's whole French experience. In England he definitely belonged.

A conventional education whose crystallised patterns of thought often turn out to be ~~not~~ more of a liability than an asset. Getting on in this world was his métier, and though he comprehended in this definition of getting on definite humanitarian purposes ...

Van Doren transmits the following story from Horace Walpole: - It is to the effect that F, stopping by chance at the same inn with Gibbon, requested the pleasure of his company - to which he answered that with all due respect to F as a man and as a philosopher he could have no commerce with a rebel. F answered, with all due respect to a

Indian Association for the Cultivation of Science

K. S. KRISHNAN. D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

distinguished historian, the
fall of the British Empire, & was
— a bon mot — all according to

when I came to write the 19 I decline
to be happy to furnish him with material.
Read is too good to be true.

Self taught and working in isolation Heaviside ~~had~~ not only
took no trouble to conform with recognized mathematical methods, but even
seemed to take a delight in apparently unsound arguments. "Maths"
he said "are of two kinds; Rigorous & Physical. The former is narrow
the latter Bold & Broad. To have to stop to formulate rigorous demonstra-
tions wd put a stop to most physico-mathematical enquiries. Am I to refer
to it because I do not fully understand the mechanism of digestion?"

Even Cambridge mathematicians reserve justice — Heaviside

Blasphemy — a wilful sinning against the light —

When the battle has been won and the victors could afford to take up a
more tolerant attitude —

It is wrong always, everywhere and for every one to believe
anything on insufficient evidence — W. K. Clifford

He (G.B.S.) will go to his grave believing that he never
approved of my biography, but his disapproval has all the force
reproach of a Victorian lady of easy virtue. - Harris

Sweet old sinner -

An Englishman's lot is still the best in the world - Emerson

There is always room at the top.

No one can see above his own head.

I never struggled. He rose by sheer grit and - G.B.S.
If he was a feeble quibbler, he was a bull dog holder

He did not want 'x's leavings
out to convince, not to persuade

Shew he is an enemy in the world & none of his friends like him
Oscar Wilde

Our parliamentary plan of setting up one party to do the nation's
work and another to prevent them doing it - Harris

A man who will not go into debt will not go into anything
big -

Pop-balers - His marriage bled the job for him merely -

It is an even bet whether

Rich men without conviction are more dangerous in modern
Soc. than poor women without chastity - ~~the~~ G.B.S.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics

210 BOW-BAZAR STREET
CALCUTTA,



To read :

19

1. Melrose : Conical refraction : *Nature* 150, 382 (1942) : Quaker's wire
2. Illusions about the size of the moon. *Nature* 150, 629 (1942).
for "Sky + Telescope"
3. Sherbini, *Proc. Math Phys. Soc. Egypt* - I, no 2, p. 7. finds that the reflection coeff. of carbon, unlike in metals, tends to zero for zero ~~refl~~ ^{e.} volt primary electrons.
4. Evolution in Astronomy : by Jeans. *Nature*, 151, 7, 1943; *Endeavour*, 2, 3 Jan, 1943.
5. Crystal structure of graphite : Taylor + Laird *Nature* 146, 130 (1940);
Lipson + Stokes, *Proc. R.S. A* 181, 101 (1942). (Clark Powell + Wells)
6. Crystal structure of Pd_5 *Nature* 151, 27 (1943); *J.C.S.* 1942, 642.
7. Crystal photography with divergent X-rays. *Lonsdale Nat.* 157, 52, 1943

Rep index of Coals. George + .. Nature 150 690, 1942; 151 53 1943.
Luminescence and colour: Nature 151 73 1943; ^{Ray + West} Endeavour 2, 22 1943
Postally Electrical Times 102 260, 1942.

Even at 12 watts per sq cm of screen phosphorescent - intensity of a television screen increases with incident intensity.

Atoms of the activators form active centres for both absorption + emission of radiations
Nickel glass transmits 70% of 3650, + ^{negligible} ~~very little~~ of visible
Additive mixture of lights in luminous paints; subtractive one in pigments.

In low pressure Hg lamps 50% of input of energy emitted as 2537 Å.
+ short wavelengths

Vacuum Technique: J. Sc. Inst. 20, 21 (1943) + other articles in the issue

Jears: Introduction to the U. States of gases. 1943

Polanyi: Resonance + reactivity. Nature Jan 23, p. 96

Bragg: Solid state: Plus minus compounds: R.I. Lectures when published

Darwin: Extreme Properties of Matter Nature 151 237 (1943)

Sticks Magnetism & its uses: Paul R Heyl Proc. Am. Philos Soc. 84 339 Mg 1941

Einstein's art on Space-Time in Encyclopaedia Britannica.

Indian Association for the Cultivation of Science



Mathematicians are like lovers. 210 BOW-BAZAR STREET
CALCUTTA,
grant a mathematician the least principle, and he will draw from it a consequence wh you must also grant him and from this consequence answer — Fontenelle

It is easier to square the Circle than to get round the mathematician — de Morgan.

in Lilliput — "His Majesty's ministers finding that Gulliver's stature exceeded theirs in the proportion of 12 to 1, concluded from the similarity of their bodies that his must contain at least $12^3 = 1728$ of theirs & must be retained accordingly" —

The irresistible force had met an immovable obstacle.

Beware of the man who says with return you show. He neither forgives you nor allows you to forgive yourself — L. J. 1888

Treat your friend as one who may someday be your enemy, & your enemy as one who may someday be your friend.

Sin Galahad "with manly grace, yet- maiden meekness in his face"

of Copernicus

He stopped the sun and moved the earth - Poland nurtured him

Specialité de maison (as the favorite waitress ~~put it~~)

Difference between finding out & being told.

Scholarship:

Habit of getting down deeper, staying down longer, & coming up muddier

The last decennial index to chemical abstracts contains about 2 million entries.

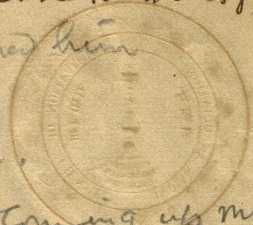
A whole time daddy.

How many unreadable copies are we supposed to type before we change the ribbon - wartime typist Punch.

The kind of man who wd mislay his head if it were loose.

Rogue's gallery:

H.G. Wells after dwelling on the hideous character of the German people adding that the refugees were about as bad as the Nazis.



Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics

210 BOW-BAZAR STREET
CALCUTTA,

The Teaching of Theoretical Physics in Universities



.....19

By Max Born, Rep. Prof. Physik I, (1941)

Introduction to

1. J.C. ~~Kraus~~ Slater + N.H. Frank : ^{Introduction to} Theoretical Physics (McGraw-Hill 1933)
2. G. Goss. Theoretical Physics (Blackie 1934)
3. R. Fürth : Einführung in die theoretische Physik (Springer, Wien 1936) (~~Hirschel 1931~~)
4. Max Planck : Introduction to Theoret. Physik (Maemilan 1932-3) (~~Hirschel 1931~~)
5. ~~A~~ Max Born : Atomic Physics Blackie, 1937.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics

210 BOW-BAZAR STREET
CALCUTTA,



3 மகாமுத்தியை சீமை லிபி
 லிபி மீது ஒரு வாரம் செப்ட-1943
 அறிவை மூத்தியை சாந்திராஜி
 உபநிஷதர் கிருஷ்ணன்
 2nd மார்ச் 1943
 க. ச. கிருஷ்ணன்
 விஞ்ஞான அமைதி உறுதி.

3 Mahamudhyas in Sanskrit
 Die m. 1943
 R. V. Krishna Chariar on 2nd
 K. S. Krishnan
 Darsana Kelenidhi
 Vidya Vachaspathi S. K. Srinivasaiah
 Sastriyal on 5th
 Dr. K. Charya Dandapanidwami
 Dikshitar on 7th

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

Compared with whom the
barbarians who marched under
Attila & ~~Alb~~ Alboin were
enlightened and humane - Macaulay

As dominie Sampson would have said "Prodigious!"
If it is a little difficult to realize the ideal, it is comparatively
easy to idealize the reality.

~~Off~~ What a world of profit and delight -
of power, of honour, of omnipotence
Is promised to the studious artisan! - Marlowe

The delineation is of course a caricature, but - a recognizable one.

The Ministry of Labour - or whoever it is that dishes out the current
plums at the disposal of the Govt -

think only of the past - as its remembrance gives you pleasure"

We must take into account and harness to our effort, all the stimuli which we know quite well do affect human beings at whatever level their tasks and duties may be performed - ~~but~~ Leverhulme

Two halves of one august event - T. Hardy

There has been a tendency for industry to regard people in Unions as having their heads in the clouds, while Unions have retaliated by looking upon industry as in some curious way "tainted" - Leverhulme.

Divine command to be like-minded one with another -
To know, to utter, & to argue freely according to conscience -

Teaching boys is like ploughing earth

" men " " " rock

" old men " " " water - old Berber proverb

The Devil, it was said, invited every envious person to hang up his
worries, like so much washing, on a line (or it may have been,
on convenient trees) so that all could choose those who he
fancied the lightest; + when the time came to make the choice,
behold every person disdained his neighbours' trouble, and
took back those burdens to which he was most accustomed. C. 1.

It was said years ago of heretical creeds that it is a
man's belief is best had it will not be improved by burning $\frac{1}{2}$.

The paths of friendships sh'd be frequently trodden
lest briars and thorns spring up + make the way difficult - C. 1.

Oldish men are a privileged class; as Sir Walter Scott
said they "may be permitted to speak long, because they
can not in the course of nature have long time to speak."

Trade like blood sh'd circulate flow - Dryden
What is all the world to a man when his wife is a widow?

Science flourishes on the exchange of ideas -
As a rare-giver ~~the~~ prophesied "Eclipse first, and the rest nowhere"

We need education in the obvious more than investigation in
the obscure — O.W. Holmes

If we had eggs we could have eggs + bacon, if we had
bacon!

I heard M Heriot at a meeting of the disarmament conference
at Geneva make the observation "to disarm appears to be an
irregular verb, with no 3rd person singular, and only a future
tense" — ~~then~~ Viscount Samuel.

The wise man profits by ~~other people's~~ mistakes of others, the careful
man profits by his own mistakes, while the fool profits by no
mistakes whatever —

Hundred of people can talk for one who can think, but
~~hundreds~~ thousands can think for one who can see — Ruskin.

Make you experts on a small scale, and you profit on a
large one — Bakeland.

It's a phenomenon known to the Prof
On Friday it works, on Monday it doesn't — see Bakeland's J.

I don't want to own anything that won't fit
into my coffin —

Some definitions

Richman: One who isn't afraid to ask the
clerk to show him something cheaper

Winter: The season when we try to keep the
house as hot as it was in the summer, when
we complained about the heat.

Conscience The still small voice that makes you
feel still ~~at~~ smaller

A statistician A man who draws a mathematically
precise line from an unwarranted assumption
to a foregone conclusion.

Tact: The unsaid part of what you think.

daughters - in - love.

My interest is in the future, because I am
going to spend the rest of my life there.

Like a ballet dancer a dry leaf twirled
across the road.

There is no place like home - if you can
find one.

He came into the house, voice first -
As ~~As~~ futile as slamming a swinging door

As anonymous as a pair of headlights.

A cowed working for an MRS degree

The weeper sex.

Take notice. When this sign is under water the
road is impassable.

Indian Association for the Cultivation of Science

K. S. KRISHNAN, D. Sc., F.R.S.,
Mahendralal Sircar Professor of Physics



210 BOW-BAZAR STREET
CALCUTTA,

19

It was always ~~thrilling~~ ^{tremendous} 'fun' collaborating with Fowler. Usually it was not he (to be quite just) who produced the original idea; but he tossed it back at lightning speed, and you had to be very agile to field it properly — Milne.

Appeals to him "to come over to Macedonia and help us" He never once declined on the score of being fully occupied with his own problems.

A Hollywood executive accompanied by his jealous wife was admiring a young actress at a nearby table in a night club. "Look how modestly she is dressed, and she does not wear a bit of make up"

"Some people," the wife sniffed, "will do anything to attract attention!"

Confluence of ideas flowing from the nations into the stream of civilization: Charles Morgan.

Those behind cried forward
those before cried back

Hecceity.

There may be something in what you say, but —

Brainful of ideas:

Whenever I saw . . . come into the room before a meeting, I knew that everything on the agenda would go right.

When asked to guess the age "from your wisdom a hundred"

It was an education to know him.

They are already sharpening their metaphors

To the ears in debt

To lay on the track. thick

Creeps right into one's spine

The play's big moment.

He sets up his own Aunt Sallys and knocks them
down.

Wherely hangs a tale -

chairman ^{confirms} to the young lecturer just before the lecture "I'm
afraid I will go to sleep. But - don't - worry, I don't - snore".

According to the independent calculations of Fawcett &
of Shantz indicate that something like 6-8 acres of cultivated
land in the world per head of population are available to
provide food & raw material. On present yields and
practices this area barely suffices. — Russell.

Hill & his team of "brigands" — which included among others
Fowler, Milne, Littlewood, Hartree, Hawkins.

There was a ~~fast~~ young lady named Bright-
whose speed was far faster than light—

She went out one day

In a relative way
And returned home in previous night.