

Werner Heisenberg Passes Away.

The Physicist Who Sent a Wave of Disturbance in the Eyes and Thoughts of Modern Man. A Glimpse in His Uncertainty Principle.

My dear Science minded Reader.

Do you know that you are taking too many things for granted? For instance, you may say with great confidence that seeing is believing. When you see a chair, you become sure it is there. You can say that to-day at such and such a time the chair existed at such and such a place. If somebody asks why do you say so, you can shout, "Why! you fool! I saw it there". And if that fellow asks you, "Are you sure that when you saw it, it did not jump up and ran away in the next room?", then you may tell him, "Eh! what's that? Are you sure you did not mix whisky and vodka in your glass to-day? Or should I call an ambulance from the assylum?"

But it is not that bad for your friend. He was talking in terms of modern physics, the science of matter and material things you come across every day, like stones and salad, metals and moon, dust and dhanshak, chairs and children and so on.

In modern physics, seeing is not believing but seeing is **disturbing!!**

No, no, you need not phone for an ambulance for me too. I am reminded of that chapter from modern physics because I read in the papers that day that Werner Heisenberg, a world famous noble-prize winner physicist died at Munich on first February 1976. And he was the man who proved that "seeing is disturbing", and thereby not only disturbed the whole edifice of science and scientific reasoning but brought it down.

He did that in 1927 when he was a budding scientist of 26 years only! And his Noble Prize came at the age of 32!

I, felt sorry at the death of this great intellectual giant of the century, a pleasant personality with keen searching eyes and signs of his great intellect beaming from every atom of his face, a man of extreme sincerity and great courage not afraid to criticise injustice, and one of the 18 nuclear physicists who in 1957 condemned the atom bomb and warned mankind against the suicidal danger of atomic war.

What a scientist and what an intellect and what a man! May his soul progress towards the Divine Goal every human has to reach!

Do you want me to tell you about his 'disturbing' discovery?

Well, it is in main a great treatise in mathematics and I know you may be one of those who would jump up and run away on hearing that big word. I won't bother you with maths.

It is like this. You know, all matter is composed of atoms, and all atoms have in them certain elementary particles (as they are called) like electrons, protons, neutrons. Let us for the sake of illustration think of an electron. It is a very small "particle". I put it in inverted commas, because sometimes the electron is found to behave like a wave! How can a particle be at the same time a wave? Particle has a position; you can say 'it is there'. But a wave is a spreading thing; it cannot be just there at one place; it spreads out and it is not 'there' but 'everywhere'.

As a 'solution' to this wave-particle dilemma (as it is called), Heisenberg presented his famous disturbing discovery-'the uncertainty principle'. To understand the principle, let us assume that electron is at this moment a particle. It is very

light. You will have to write about 30 zeroes after the decimal point to express its mass and about 15 zeroes to express its radius.

To see such a particle, you have to throw light on it. But light itself is made up of very very tiny packets of energy (called light quanta, or photons). So no sooner you throw light on an electron in order to see it, the energy packet of light gives a push to the electron. The electron is thus disturbed in your very act of seeing! And therefore you will never know what it was doing in the dark i.e. when you did not go to see it by throwing light on it. A philosopher and particularly a Hindu religious philosopher may go a step forward and say 'you won't know whether the electron was at all there before you went to see it! It may be that it was **created** by your very act of seeing

But putting aside this 'Maya' doctrine, the uncertainty principle in somewhat scientific language say that it is impossible to determine exactly the **position** and **velocity** of an electron at a given moment; if the exact position is determined, a definite uncertainty will arrive in measuring its velocity. And if you determine the velocity, the position will be uncertain.

This was not a mere conjecture or guesswork or a piece of imagination of the late Prof. Heisenberg. It was expressed in mathematical equations. The 'uncertainty' can not only be named but can be measured and expressed in figures! The reasoning was ironclad. There is no escape. Nobody has been able to challenge the principle at all, because it is **THERE** in nature. With the physical light of our daily experience, it is not possible to see the world of atoms without disturbing it!!

There may be ultra-physical light or spiritual light or divine light which may allow us to see nature without disturbing it.

Zoroastrian Science teaches us that there is in nature Divine Light - Asar-e-Roshni -emanating from Energies of Yazatas. The Rays of this can pass through various stages of condensations and one of the denser forms is our physical light and still denser form is matter itself.

Lord Zarathushtra has said in Gatha Ha 30-2, that if you develop yourself spiritually by following the Path of Religion, you will be able to SEE the innermost secrets of nature without disturbing it. I wish I could tell you about "The Uncertainty Principle in Gatha Ha: 30-2" But here goes the editorial bell! Dismiss!

Please wait a second; to come down to the ground again, your friend was talking Physics when he asked you whether the chair jumped away in the

next room when you 'saw' it!

Heisenberg discovered the inherent limitations of ordinary man's vision and its instrument, physical light. May his soul discover the infiniteness of the Divine Light and march onwards nearer to the Lord! Amen!

Yours sincerely,
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