

THE SUN SHINES ON EVERYONE

Daniel Lincot – We are in the Jardin des Plantes in Paris, near the National Museum of Natural History. As we walk around we see that there is a Becquerel alley, with the four physicists from father to son. And there is one in particular, Edmond Becquerel, the discoverer of the photovoltaic effect, in 1839. He discovered this effect here, by illuminating Volta batteries with light, realizing that it produced electricity.

There is an almost natural, physical, animal perception of solar energy. For me, it proved to be a kind of evidence, and I said to myself, we must find the means to transform it. In the beginning of the 70's, when there were debates on energy, with the first oil shock, it appeared obvious to me that it is a domain on which humanity had to think! We consume the resources of the planet, nevertheless there is an ingredient of the equation which escapes the terrestrial finitude. The sun provides an energy of extraterrestrial origin! A huge nuclear fusion reactor, which sends us an unlimited energy that completely changes the paradigm of the energy vision of the world of tomorrow.

The second point is to be able to convert it, with silicon cells. Silicon cells, at the end of the day, are a kind of magic stone, which produces electricity! The core of the cell, the engine, if you want, is silicon, which is the second most abundant element in earth's crust. We walk on silicon most of the time. When you go to the beach, the sand is silica. And of course Nature uses abundant elements, but look at the micro nutrient, look at the role of iron. In fact Nature itself does not make a human or a tree with just abundant things, it adds what we call trace elements, zinc, etc., The human industry does the same thing! When you take a silicon cell, you take silicon and you add a smidgen of boron on one side and a smidgen of phosphorus on the other side.

And photovoltaics is a major discovery that has, that is changing the world... And has changed it! Because photovoltaics is the basis of photosynthesis. Nature had invented photovoltaics long before Becquerel. Becquerel is just a little player! It happened 200 years ago, Nature, it has been doing trial and error in its lab for a few billion years, to develop cyanobacteria, chlorophyll, etc., Today, for instance, when you see a tree leaf, the current climate is the result of photosynthesis, so to a certain extent of photovoltaics! But of the natural photovoltaic!

In the years to come, at the level of research, solar cells which today are close to 20% in the market, in the laboratory they are already, for the most efficient, at more than 40%, but well, it is in the laboratory, eh, but the work of the researchers, the aim is to continue the increase of the yields. At the IPVF our mantra is to say: in 2030, solar modules with 30% of yield, at 30 cents of euro!

30%, it means that you put a solar panel, and 300 watts comes out per square meter! It is necessary to see that an internal combustion engine, the output of the car engine, it is 33 %! So you see, 30 %, it means that we are able to make, without any rotating part, only by putting in the sun, we are able to make the mechanical energy which we would make with a combustion engine... We don't realize it, because there are no rotating parts, it doesn't heat up, we put our hands on it, we don't get burned. The particularity of this energetic transformation is that it is done with fundamental physical processes, which take place in the heart of the matter, unseen to us, we don't see the electrons which come out, we don't see the photons...

This energy is developing at full speed. On roofs alone, the equivalent of the production or consumption of electricity in France per year is around 500 terawatts-hour, and this could be produced simply by covering part of our roofs with photovoltaic roofs. You can imagine, the artificial surfaces in France are about 9% of the territory, 50 000 km². Well, to produce the equivalent of all the electricity production in France, it's about 5,000 km²... A roof is not only to protect against rain, but also to produce energy at the same time! And in fact we can see that the mentality of farmers, who have sheds, who have land, is gradually changing, and they say to themselves, but finally I will perhaps tomorrow become an energiculturist! And I will provide to the country not only wheat or beet, I will also provide energy!

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