

## The Future of the Biotechnology in a Connected World

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### Introduction

At the request of Professor Mohan Singh I have presented, in two lectures of one hour each, first at all an general and historical overview about the origin and the development of the biotechnology, the ways and the difficulties it had to be recognized as a new entity, as a truly new interdisciplinary science covering all other domains and permitting to each human, and not only to scientists, to present new aspects of knowledges useful for better performances of the humanity in the rapidly actual developing world and who are not embrigaded in any political or economical pressure group or secret organisation, with outdated ceremonies, pretending to possess alone the absolute truth and who try to decide what is correct or not.

### Part A: General Aspects

#### Definition

We can give to the biotechnologie the definition as the application of the ingeniering by transformations and adaptations of materials to biological agents which at their side are influencing the materials becoming to be biomaterials, both aspects having the capacity to produce goods and services. The biotechnology results in some way from the wedding of the fire and the water, the fire being the techniques and the methods used in general science, like the physics, the biochemistry, the computer science, whereas the water is that of the interdisciplinary aspects of the cellular and molecular biology, the life being unable to exist without water.

If the fame of the biotechnology is so great to-day it results mainly from the discovery of the structure of the DNA and its use in the studies of the genome and in daily practice by determining an absolute proof, so by example of the paternity of a man by its sperm or by simple saliva of a criminal having committed a crime at an unknown time.

But in fact the biotechnology has a much larger extend and it would be impossible to consider in this review all his multiple facettes so numerous they are. Summarizing, in the western world the biochologies are classified in five categories : The Yellow Biotechnology or YBT, with the treatment and elimination of human wastes and pollutions, the Red Biotechnology or RBT, devoted to the medicine and related fields, the Green Biotechnology or GBT, which concerns the water and the agriculture, the White Biotechnology or WBT, with all its multiform industrial aspects and applications, and the Blue Technology or BBT, in relation with the exploitation of the genetic diversity of marine organisms to produce drugs, cosmetics, aquacole and alimentary products all from which I will present only some stringent examples but without having the intention to try to consider them all, what is impossible. My purpose, at the beginning, is to give an overview about the origin of the biotechnology and to consider its future on behalf of still not all but of a certain number of ways to explore.

My proposal is consequently that of presenting facts and advances along avenues of approaches resulting from an epistemological philosophical behaviour, linked to a long time experience of an highly actively scientific and medical worker, what has lasted 67 years until to-day on my actual 93 years, having through this long span of life had the chance to assist to a great number of birthes of techniques as well

as of their decays in a permanent cycle of emergences and disparitions of them, like the Prometheus' Liver which is eaten every day by an eagle but which restores immediately again. That has become possible uniquely through the fact that I became assistant professor in medicine at the very young age of 26, in 1949, at a newly from France founded French university in Saarland, but which returned to Germany in 1955, my activities having been devoted since that time applied at 100% all around to science as well as to medicine.

### The evolution

Having initially been an histologist but with an excellent training in biochemistry and in physics, I considered that the description of the cellular structures on fixed tissues was not satisfying at all and that their function had to be explained, using as well biochemical and physical techniques, and that it was as a consequence necessary to know as well these techniques themselves permitting to understand all biochemical and physical problems. And since with the time the techniques became more and more refined and sophisticated it was necessary to remain permanently informed about them. And when finally the DNA came in the forefront, thanks to Watson and Crick, permitting to consider with the highest precision and an absolute certainty the genome of the individuals, this discovery has been linked to the biotechnology and not to another domain, because considered as to be a molecular biology science straddling biochemistry and biolog, it has simply been defined as biotechnology itself, and refered as purely genetics, considering the techniques of the transgenesis permitting to decipher or to modify the genetic patrimony. But in fact that happened because it had been forgotten that biotechnology concerned a much larger field and that genetics was only a part of it.

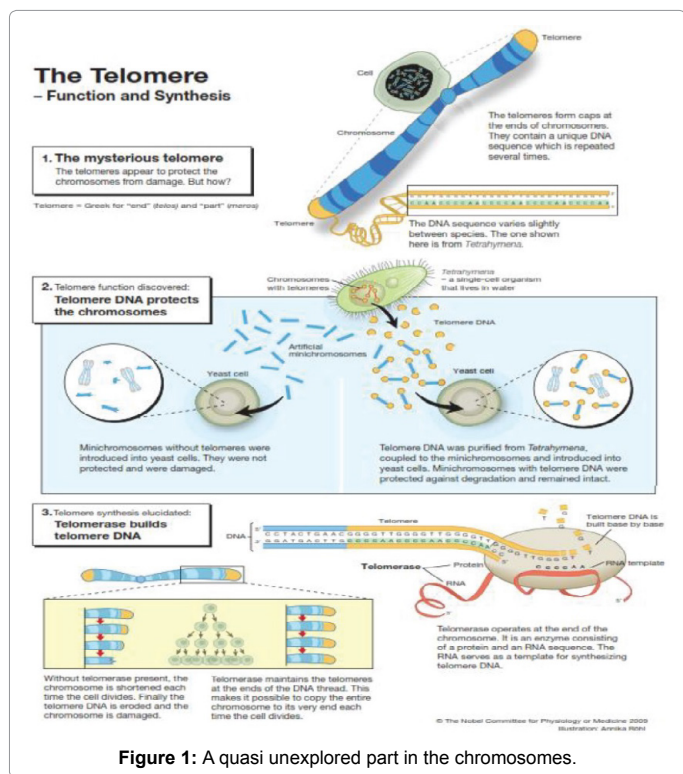
The structure of the DNA is now well known but still remains a quasi unexplored part in the chromosomes and that are the chromomers (Figure 1) for which Blackburn, Greder and Sostak have received in 2009 the Nobel Prize, implicating the telomerases for the comprehension of the development of cancer and for some determination of the longevity. But still these scientists did not have afforded more important aspects that, by example, the « size » and the « amount » of the chromomers determine the length of the life of any individual. Having observed my own chomomers 50 years back, I have seen that the « caps » covering the end of the chromosomes have not been « reduced » at my actual age. I did first not conclude anything about this situation, but now having reached 43 years more, the caps look still as complete as the long years before. By pity I have no more the possibility to see further about these structures but I am quite sure that this has a significance, namely that their « volume is proportional to the length of the life » what I call the

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« Law of the chromomers » so that at any moment, if the chromomers remain intact, it signifies that the life will continue. A reduction of 50% of them reduces as well the length of the life in the same proportion when observed at a given age. I have suggested to Professor Singh to explore this phenomenon in relation with the stem cells, what can lead him to an eventual Nobel Prize by demonstrating that this law exist, perhaps determined mathematically.

The development of a technique, as well as of a new event if we want to obtain more information and lead it to a positive result so as to become competitive, needs a flexible political and social system. And that is determined from the capacity of any country wanting to go ahead. So by example if we consider the length of time to work in a week, in USA it is not limited, whereas in France it is forbidden to work more than 35 hours what lets few chance to obtain the emergence of peak industries which by nature need numerous workers working as long as possible in order to grow, to enlarge and to be performing, in one word to be competitive. But that leads as well the workers to be hit by the « burn out syndrom » which is particularly marked in Japan.

But on the other side it is the chance of India that no any of such regulations have been established and their leaders in any domain have to become conscient of such an immense reserve of time to be transformed in energies and possibilities to grow. If we look towards Germany or Great Britain their principle is as well to work longer in a week what has as a result that in comparison with the 500 millions euros investment in the French Tech in France the Germans and British announce ten times more, 5 billions euros investments, whereas the Americans announce 50 billions euros investments. And India ? Even not 20 millions euros, so that India remains far behind in the world if an effort is not made to rank progressively USA comparing its 1,5 billion inhabitants to the 350 millions Europeans and the 250 millions Americans, what's together even not 50% of India. But the potentialities to reach USA are there. Why not to explore and the exploit them? I think it's urgent to go ahead!

Interesting is to know that the scientists of the entire world have a longer work time than any other person even a longer one than the medical practitioners which is already considered going in then 60 to 70 hours a week. It is certainly not linked with a greediness of money but simply coming from some inner inconstant push or attitude to begin and to finish absolutely a begun work. But with the time such an attitude can provoke difficulties in the family with the reproach to devote too much time to the science and not enough to the family and it is not a complete error to accuse the scientists to behave like monks living in a monastery.

And me I come to consider at which extend India can reach rapidly a better rank surely not in all domains but using techniques developing by example the agriculture with new inventions, like with the water desalter Dure®, in the watering domain or improving the health domain with the Holter-Blood Pressure® to reduce the number of avoidable deaths, wishing that many inventors but mainly from India should meet together to constitute a striking-force establishing the respect and the consideration from the entire world for having realized improvements in all domains through an original and true Indian Silicon Valley.

If I insist on such aspects, consider by example Great Britain which has in the period between 2014-2015 created on million new working places and among them many new starts up in Fin Tech what is simply impossible in France because of an egocentric and spoliating administration. The best proof is that in France only two companies have become world leaders, one in technology, that is Dassault with its 3D softwares, with 15000 employees and a turnover of 2.5 billions euros and one on biotechnology, Eurofins Scientific, in bio-analysis, with 17000 employees and a turnover of 2 billions euros, created by an engineer in mathematics and statistics, Martin, at the age of 25 in 1988 with a method using the nuclear magnetic resonance to determine the sugar in the wines. To-day he has bought over 200 laboratories of the world and the value of his company is over 6 billions euros.

### High-tech

But what is interesting is that it was impossible for Martin to start in France so that he fixed abode his affair to Belgium and Luxembourg, maintaining in France only a laboratory of 500 persons but nevertheless with 12000m<sup>2</sup>, but it was evident if he would have stayed in France, never he would have reached this extend, of this world size. It needed a great liberty in acting, important reductions of the administrative, fiscal and juridical costs, what had naturally a repercussion on the production costs. The best proof that in France all is too sclerotic to become performing is that from the recent under the banner of the newly created French Tech created 50 start-ups not less than 45 left France to work in Great Britain and be sure not simply for learning English, what is another proof that the French Tech is unable to make good work and to maintain his fellows in France because of too much pinpointing regulating laws with instructions often of several hundred pages produced by a considerable amount of state employees from the Ministry of Finances, what discourages small and beginning companies, ramshackling under the amount of constrained decisions to respect.

So, last year from the 90 created start-up in Europe having obtained more than 20 millions euros 25 are British, 18 are German and 16 are French but it will not last long that from the 16 French groups 14 will soon transfer their activity either to Great Britain in spite of the Brexit or to Germany, for the same reasons as just presented. But curious is the fact that 7% of the British people live outside of their country whereas they are only 3% of the French.

The most recent avatar of what I say is the confession in a book of a lady at the head of some young business activity who said to the president of the Republic of France who visited her, that if she would transfer her business to Great Britain she would make an economy of three millions euros, that by avoiding all the endless drawbacks she has to suffer from the excess of regulations and taxes smashing her activities at a moment this president pretends to do all better than his forerunners to reactivate the business. France is not a good place to be the boss of a business activity because permanently under the pressure and the dictatorial control of labor inspectors and of the syndicates, accused to provoke more jobless people than active workers, being therefore destructors and not creators of working places.

This bad example comes already from both ministers of labour of France, one from the national parliament, pretentiously devoted to « simplify (sic) the labour », Placé, and another from the European parliament, Harlem Désir but having both never worked anywhere and who, are totally ignorant of what means to be the boss. As a conclusion, France is not a good country to create a business. It's better to go somewhere else where you are not disdained and not exploited by the State. I can speak from experience of this situation and what is the reason that most of my time I have spent it outside from France by travelling all around the world, not as beggar but as a prophet, abandoned from his ungrateful Fatherland.

Even the Red Cross is sized in a typhoon of claims and scandals because of the catastrophic management of this organisation of an 152 years existence, with its 18000 salaries and an yearly budget of one billion euros, having been obliged to change in only five years four times their director, what demonstrates that something is wrong inside the Red Cross. But in France such a scandal touches a great part of the French administrations according a recent statement of 84% of the French population, confirming that the politicians are originating for their greatest part part from lawyers, over 50% and the rest, from former scholars of the State schools like the National School of Education or ENA or the Polytechnique, among many others schools of that sort, because it is demonstrated that they have never before had any activity or responsibility in the domain in which they have received the charge to operate, being too much disconnected from the reality, from what results the poor output of their activity and practically no possibility to understand what is active world.

In respect to the date of creation of the High Tech, USA has thirty years advance towards France, twenty years to Germany and ten years to Great Britain and how much to India ? It is painful for me to mention what an Indian gentleman of high education has written to me. That is the following :

“It is hard to give precise numbers, an estimate would be that India was 50 years behind US until the last decade as well in science advances and technology. But now I presume it may take another 20 years and 10 years to catch up respectively in sciences advances and technology ».

Regarding the investments / funds allocated, India is comparable to France in funds (to universities / research institutes) allocation in Sciences but I can definitely say the investments in information technology advancements are in part with other western countries like UK, USA. That explains a lot of the advances realized by USA and what will be difficult for all other countries to be recovered but I suppose less for India because of its immense potentialities and that in a previsible time of years. Personally I have had the privilege to observe the improvement of India in practically all fields and in all matters and that since the year 1955 when I went for the first time to India and began there my introduction first in Kolkata from where came my

two first fellows Shibajoti Guha and Radium Bhattacharya to study in my marvelous new research Institute at Paris, Guha being still living in Paris but Radium Bhattacharya having died from a uterus cancer, having never given birth to a child. I had paid a visit to her just 8 days before her death in december 2009. Her husband is Anand Dalwadi, who still lives at Ahmedabad and is à famous photographer who was himself the scholar of a French world reputed photographer who has protographed entire India from the years 1950.

### Origin of the biotechnology

And considering the biotechnology this name has been created by some unknown scientist shortly after I had created the terms Cellular and molecular Biology<sup>7</sup> in 1960 and renamed with it my first journal. But I did not wish to change again the name and left it as it was. In fact I did not see how to integrate the term technology in my terms where the word « physics » was missing and that pure techniques aside those of biology had never been presented to my journal, so that it was impossible to integrate a definition of it in my journal. But it was around the year 2000 that papers of various aspects of biotechnology have been submitted so that I can say that to-day the justification exists to rename my journal in « Cellular and molecular Biotechnology<sup>7</sup> » with all its multiple facettes who are so numerous that it is not my intention even to try to consider them all but mainly give an overview about some of them, but mostly considering their future on behalf of still not explored ways.

My behaviour is consequently that of an epistemological scientist whose interest is to observe and present all new experiences and discoveries inside of the scientific and medical worlds. As an example I have added two files to this paper, one mentioning all figures I have presented at the Biocumbh but impossible to be published here because too numerous and another which I call « Biotechdoc » which is the starting dictionary of biotechnological terms or events of the most recent period and which I intend to complete progressively.

Going back to the definition the biotechnology, the biotechnology is based on the purely Objective bases of cellular and molecular biology, a disciplin which I have created progressively from 1949 to around 1960, I confess without having thought on it intentionally but what resulted from what I call a « subversion » realized not against my will but through my natural tendency to accept all new elements, and to consider how they can be integrated in my system.

Having initially been an histologist but with an excellent training in physics and biochemistry I considered that the description of the structures was not satisfying, too restricted to the consideration of their forms and not explaining their function, which had to be presented biochemically and what has had as a consequence the necessity to know as well the techniques permitting to understand these biochemical problems. Having received and accepted progressively in my first journal, the « Annales d'Histochemie<sup>7</sup> » created in 1949, and which was devoted mostly to histochemistry and histoenzymology, a lot of papers having been rejected by all traditional unimodal journals, because they integrated and used techniques very far from the traditional biology, I considered them corresponding exactly to my opinions, to my concepts and to my general scientific philosophy.

Naturally that provoked true schizophrenic behaviours from the traditionalists in anatomy, embryology, histology and biology who were the dominating chairmen and had all power to « cut the heads » and to eliminate such people like me who had the courage to pinpoint their narrow minded concepts and who considered themselves as possessing the absolute truth, trying desperatly to eliminate the young « conscience objector » I was. And when I became chairman in Lebanon in 1960,

what I could not become in France because of my opinions, raming my head against a wall of critics and of bad wills, my boss in Paris, Verne, one of the three vice deans of the faculty of medicine, who was more devoted to his mistress, a divorced woman of a professor of pediatriy, Mme Hébert, had not the courage to defend me inspite I was on the same line as himself, that means as an histochemist.

I had in mind to find a name from greek or latin origin, as it is traditional in science and medicine for my chair integrating all the methods using physics and biochemistry in biology. But it was practically impossible so that I decided for the terms « Cellular and Molecular Biology® » as an interdisciplinary science which had an immediate success, approved from the British Nobel Prize Winner of German origin, Sir Hans Krebs, who has discovered the Krebs Cycle, which plays a considerable role in the metabolism of the cells. But at he same time I had to suffer from terrible drawbacks resulting from the terrible jealousy from my French and foreign colleagues, mainly from the American society of Cell Biology which tried to boycott my 2<sup>nd</sup> World congress of Cellular and Molecular Biology® at Ottawa in Canada with the most disgusting and ashaming tricks making not honour to these American biologists, but as well from the Dutch publishing company Elsevier, a true criminal organization, terribly hated from the American university librarians for its excessive subscription prices and which had published a journal of exactly the same name as the mine, because I had refused to transfer to it my journal and its title.

This gangster company had added behind my term « CMB » the term « Research », what provoked an immense disorder in matter of subscriptions but I killed this journal in less than two years, by visiting individually the American university librarians who refused all subscriptions to the criminal journal, which made bankruptcy and who has lost a fortune and Elsevier the consideration of an honest company. Dramatic was the fact that the origin of this terribly dishonest robbery attempt resulted from the editor-in-chief whom I had named at this function, an American from Pakistany origin, M.A.Q. Siddiqui, professor at the New York City University whom I had made all favour and gentleness in my home and elsewhere. Another individual, a fellow whose university carrier he owed entirely to me, the Libanese Tony Antakly became a traitor of the worst sort, having refused that his wife quits the fake editorial board to which she belonged but from which finally she has been ejected.

But I had to support other problems. The American Society of Bacteriology changed brutally the terms of my name CMB in MCB also « Molecular and Cell Biology » in spite I was the legal owner as well of these terms, these disgusting hoodlums having pretented to not overlap with my domain what was a Giant and Execrable Lie, since it has presented from its first issue exactly the same problems and topics like published in my journal, And my last recent avatar is that of a criminal individual called Maixent, a French professor Definitively ejected from his university for giant embezzlements towards not only his university but as well towards his own students, having as well made falsifications of a lot of official documents. This hoodlum has stolen to me my journal by falsifying my original charters and by submitting to the Prefecture false charters signed with my signature he has photocopied on a letter he had extorted to me with totally false averments and pretexts, but who soon will be condemned to 20 years jail and immense damages.

The worst in that affair is that he has received the unconditional support from two female judges, one named Lacoste who is at the same time the president of the court of justice of town, Poitiers, where lives this criminal guy, presumably because of his relations in free masonry or perhaps the judge was enloved in this man who has an

extraordainy charm hiding his criminal behaviour, the other judge being as well a president of a court but at Paris and named Poinseaux, who has simply confirmed the criminal judgment of the judge Lacoste namely to attribute to the gangster Maixent all my goods, my web site, my archives, my journal and all the important amount of money of my bank Bred which had as well a criminal attitude towards me and which will be heavily condemned to very high damages.

As you see, the life of a scientist is paved with good intentions but as well with terrible traps and tricks which by chance I have been able to overcome easily thanks to the force of my character what no any trouble from any side can disturb, since my concepts made from never rusting steel, taking care to save the CMB® and to maintain it alive until my end which is not programmed for to-morrow. That means that neither the cellular and molecular biology nor the biotechnology have to suffer in any way from all these events so that- I hope so at least - all those having contributed to maintain intact the existence of both entities may continue tranquilly to enjoy their presence even if the creator of the term biotechnology has remained unknown.

### Cellular and molecular biology

And now how did the biotechnology arrive to his eminent and important place to-day in science ? At his basis was a first revolution which consisted in the study of the living cells and no more dead cells fixed in formalin, embedded in paraffin and cut with a microtome, colored with simple colouring reagents like eosin-hemalaun to distinguish the nucleus and the cytoplasm itself.

And the new technique was to use fresh tissues obtained mostly from biopsies with a fine needle to extract a small cylinder of tissue from living organs of a size of about 3 to 5 millimeters or from surgical interventions of borgans difficult to obtain otherwise, being congelated in liquid nitrogen at minus 190°C or in CO<sub>2</sub> at minus 90°C, permitting to maintain it in a living state. The next step was to cut these tinny pieces of tissue in a Cryotome, cryos meaning cold and tomein, to cut - see the word anatomy - or cutting from below to up a body for a dissection.

The first cryotome refrigerated at -90°C with carbonic oxygen has been invented by the Danish scientist Linderström-Lang in 1945 and the second made by me in 1949, made by a wood box containing a traditional Minot microtome oiled with silicon and refrigerated with CO<sub>2</sub> at -90°C. I have tried desperately to find an industrial to make such an instrument but with a nicer design in France, but because of the narrow mind of the industrialists, I failed to obtain satisfaction, and once more it were German and American industrialists who produced most of them, so that a great part of the scientific biological world became equipped with this machine. I don't know what is the situation in India with these important instruments and I convey an industrialist to build them, because the concept to use fresh tissues has taken a dominating position allover the world and it would be an excellent deal, that all biological and biotechnical laboratories of India would be equipped with the newest cryotome I have invented and whose principles and technique some industrialist in India can easily realize, the Indian cryotome being entirely automatic and vadapted to the modern conditions of activity. I will explain him what to do and how to do, because there is giant market to win and not only in India, knowing that the entire world is waiting to buy the newest model accessible to all countries. The extend and the quality of the biotechnology in India depends from it. And consequently India will become leader as well in that field.

I have as well to mention at this occasion that a British scientist,



**Figure 2a:** An aspect of pollution.



**Figure 2b:** Water toxic Lake Natron.

Everson Pearse, totally ignorant of latin and greek languages, terribly jealous of my excellent fame in histochemistry, came nevertheless to visit my cryotome and returned at home to build as well a cryotome, but with the totally outdated balancing microtome which had no any success. But the curiosity was that he used for his instrument the term Cryostat, what means « controlling the cold temperature », what was a complete error because there is no any indication that the machine, « cuts » anything, the corresponding counterpart term being Thermostat for « controlling the warm temperature ». And the term Cryostat published in a British journal dominated after that I had published in the *Annales d'Histochemie* the term « Cryotome ». Later on happened the same with the stupid term Apoptosis, meaning « falling upon », what has no sense for mentioning the death of the cells, whereas the true word is « Cytopoptosis » « falling of the cell » and by extension « to death » because a leaf, when it falls, on the bottom is still not dead and dies by losing its green nature. I know from my own experience that always the most powerful groups of scientists or of nations whose language is not based on greek and latin bases impose new names or definitions inspite they are falsely built or the definitions totally wrong. It is well known that the foreigner's word whose language is not English has a lesser weight than that from the vernacular English speaking individual or country. This demonstrates the irritating tendency of these individuals or nations to pretend to have the right to dominate all other people. But that has taken an end with the self destruction of the British empire made by England with the Brexit or « Briton is going out ... from Europe, India having had its long experience from Great Britain.

## Part B: The Different Biotechnologies

### The yellow biotechnology

If we consider the Yellow Biotechnology or YBT, its role is simply incontestable, incontournable. So if we consider the pollution, it's simply the result of a general surrender of the respect to pay to the Nature. India is the typical example of it but it hits absolutely all places and countries of the world. If I take only one country, so by example China, we can observe that the countrysides are filled with waste, with plastics, with emptied cans of all sorts, papers, refuses (Figure 2a) as well in the streets, in the rivers where you can see boys swimming around or men in a boat removing algae from the river overloaded by them if not a lot of dead fishes resulting from poisoning of the water from some negligent factory.

You can see people in the street sometimes coloured from accidental throwing of colours of a factory or of fibers mixed with petrol, And what to say about the pollution of the air ? You may see numerous factories emitting dark smoke during 24 hours or a town in the morning where the smoke begins to darken the beginning day what has as a consequence that the neons of the shop have to remained switched on because the entire town bathes in smoke. In the streets there are a lot of people wearing a filtrating mask to avoid to inspire toxic smoke and particles. The recent World Economic Forum of Davos in Switzerland affirms that in the year 2050 the seas of the earth will contain more plastics than fishes in matter of weight. A report made by famous sailor Ellen Mac Arthur who won in 1995 the race around the world and by the office of Mckinsey, has determined that the ratio was in 2014 one to five. It will be one to three in 2025 and one by one in 2050 and that this waste will represent a loss of between 80 to 100 billions of dollars.

But there exist as well waters naturally polluted, like the terrifying African lake Natron in Tanzania (Figure 2b) whose red surface is only a lure, a decoy and which has as a consequence the petrification of the animals. This lake is known to be the most murderous waterplace in the world and there never any remedy has been tried to change anything on it, so to become pure. The reason is that this water contains mostly hydrated carbonate and natrium bicarbonate which exist under the form of a white powder, called natron, which was used from the ancient Egyptians for the mumification. It contains as well great quantities of salt, has a pH of 10.5 and the water can escape from it only by evaporation and has temperature of 60°C. And a photographer, called Nick Brandt, says that he has observed along the rivers of this lake petrified birds perfectly conserved from which he has reestablished some in order to see better this terribly sinistre aspects. He supposes that the birds have been illusioned by flying inside the sea which reflects the heaven so that they have been transformed in stones.

Until to-day nobody has tried to use the water of this sea, but I think that it can be an excellent source to produce ... biodegradable plastic simply by adding sea algae so that two, in great quantities existing polluting agents, can be destroyed to replace the plastic originating from the petrol whereas desesperately such replacement agents are searched. But I can say moreover that there exist many other sources for producing biodegradable plastics and that, if until to-day nobody has used them, it comes simply from a lack of batters and of cross-checkings, what I have already said previously concerning the biotechnology which is the wedding of the fire and the water. I say that invention is not a gift from the heaven but it can be learnt as any other science or at least be induced in favourable conditions.

The best example is that many universities produces Nobel Prize

Winners from the presence of Nobel Prize Winners in their university as exist so numerous examples in USA. Why does India not try to have Nobel Prize Winners in science and in medicine, because they are very seldom in these fields? I will examine this cumbersome question in another presentation, me feeling me personally frustrated that such an immense people has much less Nobel Prize Winners than the small Switzerland. Has anybody ever thought on this still unsolved problem? I know the reasons, having taught and given lectures in so many Indian universities since 1955. That are first at all an insufficient amount of high tech instruments and secondly a too poor salary what attracts the Indian scientists to USA but from where they don't return to India, fearing to fall back in their miserable conditions in research. Look, the greatest Nobel Prize Winner in Science from India was Sir Raman, the inventor of the Raman spectroscopy, but he would never have received the Prize if he would not have migrated to Great Britain.

If I extend my observations on the seas it is not different. Observed from the moon by the astronauts our earth looks like a marvelous blue planet on which are many big vessels transporting goods from ports to ports, passing near splendid coral barriers over which are planning nice clouds whereas in the deep sea swim tiger sharks, sword fishes, ocean stars, crab-porcelain fishes and an immense mass of the most wonderfully coloured fishes at any surface even in the abysses which reach over ten thousand meters like it is observed near the vulcano Maura Kea in the Pacific ocean, which makes eruptions even being in the deep sea. That all is nice but if we see the petrol extracting platforms, the danger of the pollution is not far with the numerous accidents as well from these platforms as from petrol containing ships having crashed near or far from the border, with the dramatic pollution of the birds and of the coasts, what could not be removed easily from the costal areas and whose depolluting agents have often made worse damages than the petrol itself.

Other types of pollution are once more the plastics thrown on the border of the costal areas with dead birds having eaten plastics which can be observed in their skeleton after their death or innumerable particles of plastics polluting corals. Another drama is the fishing of wales, mainly from the Japanese against what is battling the corsar of the seas, Paul Watson and many other associations to protect them and the human friendly dolphins.

### The red biotechnology

**The obesity:** If now we consider another chapter of pollution, that of the Obesity, which in some way is the pollution of the body with fat, through to excessive ingestion of nutrition we may consider four types of obesity. The first is the "intentional obesity" which is provoked by forced feeding of animals, so of geese and ducks in order to obtain fatty livers from what are produced what is called the "pâté de foie" or liver paste, a product coming from a practice against which all animal protecting associations are fighting. Very recently, the famous actress Pamela Anderson well known from the film *Alert at Malibu* in the years 1995, had been contacted by the French green deputy, Laurence Abeille, on behalf of the gratuitous newspaper 20 minutes To come in front of the French National Deputy Assembly to support her law proposal intended to forbid the cramming of the geese and of the ducks. The cramming consists in a forcible feeding of these poultries in order to produce a fatty liver paste which contains as well madère and porto wines and truffles and is eaten in company of champaign wine, so that it is rather expensive - but from far not so costly as caviar - and which is highly appreciated by the French people as a delicateness but as well by all Europeans, the Russians, the Americans and the Chinese. Naturally this proposal has immediately given rise to an immense

protest not only from all politicians and deputies as well from the right than the left wing to which Mrs Abeille belongs, but much more from all the numerous private farmers which produce this paste, but as well from the packaging companies presenting the paste in small boxes, deploring that it will provoke an important diminution of the sales, an huge financial loss and making many employees jobless. Naturally the proposal has been rejected, since to touch such a monument of the French culture is considered as an abominable crime, whereas in fact already the Egyptians 4500 years ago have already eaten the liver paste of force-feed birds, followed by the Romans and only used in the Middle Age by the highest classes, what became common in all classes in France from the 18<sup>th</sup> century on with the increase of the financial conditions. This proposal happened unfortunately just at a moment an epizooty, the chicken fever, has hit all poultry yards what has provoked already a loss of about 350 millions euros whereas, it has hit frontally the warrant network which employs 30000 direct employees and about 100000 agents directly or indirectly implicated in the sale of the paster. So you can see the immense difficulty to promote a change in such a field implicating so many opposite economical factors.

But not only in France exists such a forced feeding of animals, but as well in China. I remember, when I was invited some time ago to give lectures at the University of Hong Kong, to have eaten a small hairless fatty dog which had been recommended to me by my colleagues as being a "delicatess". And because I respect the traditions from all the countries in which I was invited, I have accepted, not considering any religious taboo, and I have to say it was delicious and has tasted like a rabbit or a chicken. And I understood foreign people and have appreciated greatly as well when my so numerous Indian fellows from whom I invited so many in my great country home in Alsace I presented them raw oysters and cooked snails as local delicatesses, having observed that they presented the same respectful behaviour towards me as me towards them, that they appreciated as well such local culinary habits like in France.

But I have never eaten nor presented worms and insects to eat, like some adepts of the new nutrition mode propose to do it, arguing their high nutritional qualities. But such such a type of nutrition with the time, become an habit, not ignoring that many new totally unknown products in the Middle Age now very common, took a long time to be accepted so by example the potatoes from which at the initial, time only the external green parts have been eaten, whereas they are more or less stoxic until it was discovered that only chair of their bulbs had to be eaten. The same happened to many other products like the chocolate used first as a medicinal product before to be discovered to become the sweatness it is to day, but most of then people ignoring that chocolate has not to be given to the dogs, because the liver of the dogs does not metabolize the thein present in this product and is consequently dangerous for its health, the cats being less in danger. The spices had all been considered initially as being medicaments. All that shows that the humanity is able to adapt itself to all conditions, situations and products when it is discovered that they are favourable for its well-being. It has to attribute to many of these products, like to the potatoes and to the maize the increase of the number of people because of their nutritional value and the diversity of their culinary use.

But at this occasion of the habits of the human to respect the traditions of other civilizations I have an amazing story to remember from India from my early time to visit it, and that coming from my so beloved friend, Bhuu Hoi Tewari, a noble brahmine who came from Lucknow, was professor at Udaipur, now dead since a long time, and where I have spent my first course in histoenzymology, during which

I have discovered my so faithful fellow, professor Prem Prakash Sood, now retired at the pretentiously « free from alcohol town» of Rajkot, whereas when I went for the first time to this town, as soon in the room of the hotel, a barman entered and said « Sir, what is your preferred whisky? We have a lot of them ! And at another time, at this airport, by removing my luggage, it felt so hardly on the bottom that a big bottle of Schnaps from Lorraine crashed, so that the entire arrival room smelted the odor of strong alcohol. But nobody claimed...

Tewari, after my course in Udaipur, had gone to USA, and after that, has visited my country home in Alsace and I was pleased to discover that he took absolutely all kinds of foods, even snails and oysters and drunk all types of alcohols, even champagne, never claiming about any of them. He learned me that he had presented the same behaviour in USA. I was enchanted and congratulated him. Later on, when I came back to Udaipur, he invited me to stay in his home, and to take the meals with him. I have observed how his wife, as well a professor, but in medicine, has prepared the the purely vegetarian meals in the kitchen, together with a boy, a paria. Then we sit, not at a table, but on the bottom of the main room, eating with the hands as it is traditional in hindu custom, served by the boy. And at a certain moment happened the most strange event I had to observe in India: that was that served by the boy, Tewari has been touched inadvertently by the boy at the right hand at the moment he was ingesting the foot in his mouth.

And Tewari, having become white like chalk, stood up, like moved by a spring, run urgently in the toilet, where he rinsed loudly his mouth and washing longly his hands, then came back in the room, sit tranquilly at his place and continued to eat as if nothing would have happened. But me I was greatly surprised and asked him about what I had considered as a comedy or at some urgent need of the urinar bladder. « Oh, he answered, I am so sorry, it was a typical reflex of a millenary tradition which has mastered me. In India, if an impure man like my boy touches my hand during ingestion of food, my meal is no more pure because pouring food in the mouth with the hand is a sacred rite in Hinduism ». In that manner I took the first lesson of Hindu religion, but not forgetting that Tewari was accustomed to cosmopolite civilisation, but only in foreign countries !

This event has been followed shortly later on by another curious event for me, a day I was invited to take a bath in the holy river Ganga, from which a branch passess through Kolkata. My colleague and me went to the river, draped like monks in orange clothes and I observed that he gave from time to time just one rupee to the beggars and preferentially to severely handicaped men. At the moment we wanted to enter in the river, we have seen something like an half burned cadaver floating at mid-level in the floats. My colleague became twitched and immediately returned at home, me understanding its repulsion to bath with a cadaver in sight but asking him about the money spent and so few : « Oh, he said, it was not for buying nutrition, its not enough but in order that he dies rapidly ». And he continued by explaining what is the cycle of lives in Hindu religion : where anybody has to pass each time, a full life cycle from shutra to waishya, kshatriya and brahmine to enter in the nirvana. So I have received my second lesson of hinduism but have failed to bath in the Ganga, until the year 2016 when, at Allahabad, I had the opportunity to pay my tribute to the holy river Ganga but in my personal manner as you can observe it on a picture.

Coming back to obesity, a second type, a seasonal one, I had observed in my country, last winter, on squirrels which normally remain rather slim, that they had become terribly fat as it seems not possible. I discovered rapidly the reason : it resulted from the climatic conditions, from the fact that the squirrels, which normally sleep in winter time

and fast during this period using their body reserves. But they did not sleep because of the too warm temperature which remained largely over the freezing point so that the animals remained awoken. And since these animals nibble permanently all sorts of nuts, they have taken much more calories than necessary, knowing that the nuts contain a high proportion of oil. I will see in the next months what happens in my garden where many squirrels are living but which find their nutrition all around so that it is impossible to reduce their nutrition.

At the contrary, several years before, during hunting of hares in Alsace, in order not to shot them dead but to study their very big becoming adrenal glands and the great loss of about two third of their weight, at the end of a very hard winter time, I had seen what means to have lost so much weight and to suffer from underalimantation. I have published the results which were not different from what I had suffered myself at the end of the year 1944, having escaped from a previous condemnation to a nazi concentration camp and even escaped a condemnation to death, I had been condemned again, but this time from France, together with 350 of my Lorraine compatriots, under the criminal false, stupefying and scandalous pretext to have escaped the nazi tyranny under German uniforms in order to serve as spies in favor of the Nazis!

In less than six months, reduced to eat the remnants of food left from German prisoners surrounding our immense tent, without any fire station whereas the temperature went down to minus 30°C, our food limited to 350 kilocalories instead of 2000 KC as requested from the WHO, we lost all over 50% of our weight. My brother and me had only 37 kg weight when we were freed from this French concentration camp whereas initially our weights were 80 kg for my brother and 73 kg for me. But by pity 90% of our compatriots died from the consequence of this dramatic inhuman criminal starving so that today we are just ten surviving people. How can I forgive to France such a mass crime for which we have never been repaid or compensated in any way by France? No, I can't forgive, never, and what explains my attitude as well for other reasons and to have choosen India as my Fatherland as so more that my second son is a pure Indian, a boy abandoned by his mother at his birth and immediately adopted, who is to-day my beloved son, 28 years old.

Once more coming back to the obesity, there is a third type of obesity, that of the humans, whose clinical aspects belong to medicine and what would need a complete nutritional congress in order to be considered. I will just mention some causes of it, so by example, the role of the fast food which in USA is responsible that so many persons are obese at a proportion of 63% of its population, what is the highest of the world, followed curiously by Malta, the little island and country of the European Union with the greatest proportion of obese people, 28,1%, whereas Roumania is the less touched with only 9,4%. But there seems to not exist any country without the implication of the obesity and from what is near the weight overload. In France 16% of the adults present an excess of weight.

One day during a visit of a tower in USA I wanted to take a photo of a woman a few meters from me but she was so fat that I could photograph only half of her body. I remember as well the terribly Indian fatty family met in my hotel at Bangalore some years ago, when a family of four persons entered therein. I could not believe it. First came a giant, nearby as large as the entrance door, of an estimated weight of 150 kilogs. Than entered his wife, as well a giant, but even more fat than the husband, with enormous breasts, perhaps 200 kgs, and finally entered the daughter and the son, once more giants but already certainly over 100 kgs each. I was stupefied to see such monsters whereas so many Indians reach even not 50 kgs, terribly undernourished.

At Ahmadabad I have been invited, thanks to my so beloved fellow Radium Bhattacharya, from the “high society”, all very rich people, but whose origin was mainly very modest, I can say even having remained elementary, without high education, but who became rapidly rich through their idea to manufacture kitchen and house utensils, mainly in plastic and other products. But since they did not have time to make sports or have other activities for maintaining their bodies in a good condition and having no any intellectual interest, because of their rudimental and primary culture, their favourite sport was to eat and to eat.

Having been invited to measure with my newly developed ambulatory blood pressure monitor the blood pressure of these people which had systematically an overweight, I observed that they were systematically hypertensive, all being obese and having hypertension. But the obesity hits all countries at different proportions even in Europe. My actual wife, a nurse, had one day to weight in her hospital, in Switzerland, a woman who could not walk by her own, so fat she was. And she had to weight her, but one scale weighing up to 150 kgs was not sufficient to weight her. She needed to take another scale, weighting up to 150 kgs, by maintaining the woman with one foot on each scale: she had 250 kgs! Is that not terrible ?

Another common reason to become obese results from the simple habit to drink much sodas, the sweets drinks you ingest everyday and which you take at any occasion even if you are not thirsty. The responsible drinks are the sodas like the Coca Cola which has invaded the entire world. These drinks do not contain glucose but exclusively fructose and aspartam and when you drink such drinks your stomach never gives you the degree of satiety given by drinks sweetened with glucose. The reason is that neither fructose nor aspartam does stimulate the production of ghrelin, the recently discovered hormone producing the sensation of satiety, so that you continue to drink these sodas. Another reason is that the aspartam is not metabolized even being a combination of two amino-acids, neither the fructose which can be metabolized in glucose uniquely by the liver, whereas glucose is immediately metabolized by the cells and only the cells can use glucose to produce fat.

If now the liver receives too much fructose it produces much glucose, but which is not sent at the periphery as long the ghrelin is not ordered to function like an electrobionic switch, which remains normally closed, but which is switched on only when a signal comes from the insulin to send glucose to the cells. If now the liver receives much fructose it transforms it in glucose and in the absence of a signal from the insulin to switch on the ghrelin to send glucose to the cells, it simply transforms the important masses of glucose in fat so that the liver becomes obese what is observed on the fatty pot-belly paunch, as well ironically called womb, like in the case of the fed forced ducks and sends moreover its excessive stocks of fat through the artery vessels at the periphery, whereas at the same time the cells of the vessels store a lot of this fat so that these vessels begin to be overloaded with big and hard fatty bodies troubling the blood stream making the stream difficult to run and provoking successively hypertension or HTA, and either the blockade of the coronary arteries leading to an heart infarct or to a rupture of the tinny brain arteries leading to the stroke and both to a sudden death.

The terrible drama with the HTA is that once filled up with all these « biological detritus » there does not exist any mean to remove them from the circulation by dissolving them or by excreting them like does the intestine with the digested nutrition in the faeces. That is not all. When you drink sodas, the cells tend to become resistant

towards the effects of insulin. At that moment the pancreas has the propension to produce supplementary insulin in order to diminish the rate of the glucose in the blood. That is called the resistance to insulin and represents the first step to diabetes. When the cells produce fat from glucose but as well what is called fatty cells filled up with fat, these specific cells begin to produce a specific hormone called leptine. Its main role is to manage the energetic balance of the body at a long term by dictating the number of calories we have to ingest or to burn. Consequently the leptine is responsible of our protection against the obesity and the famine. The medicine to-day thinks from now on that the resistance to this hormone is therefore the main cause of the weight intake. A study made recently on rats has demonstrated that rats fed with great quantities of fructose began to develop this resistance, what disappeared totally, once the assay did not contain a trace of fructose. But that has still to be confirmed in an human assay.

In another study made this time on a group of 32 men in good health having drunk during 10 weeks either glucose or fructose enriched drinks, has demonstrated that those having drunk glucose have deposited only tinny quantities of subcutaneous fat, whereas the fructose drinking group has presented large visceral deposits. But this has a consequence that there are many subjects becoming addicts not only to overfeeding but with tendencies to use drugs, like with cocaine, morphine, marijuana or amphetamins. But the number of addicts of sodas is not less conducting all to obesity. If you ingest sugar of any type, fruits, chocolate, ice cream, their sweetness induces in your brain dopamine which gives a relation to one of our senses, the pleasure, the sixth sense, but which is not mentioned in the physiology of our five senses, the pleasure being a purely from the brain determined sense like it with all other drugs.

And what to say about the numerous informations pretending to reduce rapidly the excess weight with “miraculous diets” pretentiously and proudly confirmed by apposing aside the photography of the initial fatty body a truly slim aspect? In one word, all tricks are valuable, the first one consisting to provoke the « adherence to these tricks », like do it the founders of new religions, the most efficient way resulting for addled individuals being to lift their despair to loose their fat, then to exploit individuals thanks to their credulity, pretending to be expert in nutrition and asking the people so by example to say, how much they want to loose in weight, 5, 6, 10, 11 or more kilograms, as if these “specialists” would know the secret to order the fatty cells to disappear by some humbug mathematical formula.

It would be too long to mention all the methods, all these illusionists use and abuse about their patients, and the enumeration or all their tricks would represent a long litany making you sleeping. In fact there exist one method that is the mental strong and irreducible force to reduce the weight, by applying a severe restriction in calories with a corresponding diet, and by an important body activity by any sport, what includes massages. All other methods and drugs are costly, and often dangerous tricks made to extract money but not fat from the body of the naive obese. Much simpler would be the use of different « calorimeters » as I have shown several ones, like such for bread or for meat (Figure 3) for fruits, permitting to measure the calories of the nutrient so that the candidate may loose his obesity by knowing the amount of calories which are permitted to be used per day, the normal value to maintain a weight being about 2500 kilocalories and by simply reducing this amount per day in the limits of the capacities given the candidate to himself.

They are simple device projecting a light ray on the product to know on the spot its amount of calories, so specific ones on bread, on





Figure 3: Diet-sensor for meat.

cheese, on meat, on fruits so that we can really « mould » our body by calculating how much calories to eat a day, knowing that it is admitted that with a reduction of only 500 kilocalories of the 2500 is sufficient for reducing a weight by 5 kg in a month. But what is exactly a « normal weight » at different ages ? That means that nutrition has to make still great progress being still not a scientifically « exact » matter. But it approaches !

**Ageing:** I will now consider other methods and systems related to biotechnology like health problems. The first will be the consideration of the dream since ever of the humanity that is to become aged as long as Methusalem, from the bible, pretending that he reached an age of 969 years in the best conditions, having lived from the jewish year 687 to 1556 after the creation of the first man in the paradise by God, who has used clay to make Adam. This man became father at the age of 187 years of a son named Lamech who reached “only” 775 years and who died ten years earlier than his father. Naturally that is a full legend and has nothing to do with the reality because, since the memory of the earliest events, never has existed anybody having reached such an age. The best what is known is the French woman, Jeanne Calment, who lived 122 years and 164 days, whereas the next most aged person was the American Susannah Mushatt Jones, born on july 1899 and who died on June 17, 2015 at the age of 116 years. But not seldom are in the actual days announcements of a death, like recently at 99 years like the French balett dancer Yvette Chauviré or many years ago the famous tycoon of the petrol Rockefeller who has tried despairily to reach 100 years but failed at 99. And actually a group of « transhumanists » among them several Russian very young billionaires pretend that the age can be prolonged until 500 years but not considering what would result from such a catastrophical long life concerning continuation of real activity, date of retirement, payments of the waggas, family life and so on. Naturally all people and scientists have been interested in this problem of ageing and they have raised many questions and used many methods how to prolong the life, why some become old and other not, why some remain clever and other not, what is the great majority and from whom many become « childish » if not simply creazy as it happens with the Alzheimer’s disease.

But if we consider the mean age of the population it has been observed that it has increased spontaneously since the Middle Age which was 25 to 30 years whereas to day it is in Europe its 81 for the men and 85 for women without having requested any special mean to increase the duration of the age. But why as well this sexual difference? It is admitted that it is the hormonal status of the oestrogenes and the progesterone produced in the ovaries even long after the ovary does not possess any more any active ovule. I At the contrary the men produce large quantities of testosterone during all their time and produce sperms much longer than the females whose gestation capacity begins

at a young age of about 12 and ends with the menopause which varies greatly according the women and can reach 53 to maximally 55 years. If there are not seldomly announced paternities from men over 90 years it is very rare that a woman gives birth at 70 years. It seems but has still not been demonstrated with entire satisfaction that the men who begin to produce oestrogenes when the testosterone production diminishes and whose female hormonal production increases at an higher rate than the medium increase in men live longer. It seems also that it is inversely correlated with the prostata activity which in most of the men does not store any more sperm in the seminal vesicule but has tendency to increase in size what is called prostate hypertrophy.

I certainly do not recommend to inject to men female hormones in order to prolong the duration of the life because nobody knows any criteria concerning the relation of the rate of the duration of the life and the amount of female hormone in men.

But now exists the famous yellow or blue pill, Viagra, said to rejuvenate old men whose wish is not so much to become father than to be able to continue their sexual activity, because this sexual activity diminishes considerably with the diminution of the secretion of testosterone and the increase of the secretion female hormones. The reason of the success of this pill is that many men want to maintain their sexual performances when they have no more correct sexual performances what provokes great relation troubles with their wife, particularly when she is often many years younger and is not sexually satisfied. That is the main reason of the success of this pill and I have prescribed great quantities of this drug to old men but the result is by far not so perfect than the companies producing the product affirm it.

Me personally I have learnt, but by chance not among my patients, that the drug had provoked a lot of sudden death, but which I don’t attribute to the drug but to some existing latent or hidden heart diseases or hypertension, having led to this dramatic end, so that I have allways recommended to visit first a cardiolog, to make an Holter-ECG and an ABPM to control if there are not troubles of the cardiac rhythm and of the 24 hour blood pressure. I have insisted on these exams when I discovered that by making a blood pressure examination of men during the sexual performance, that this performance is always linked with an important hypertension and that the danger of death seems related mostly to the conditions of a very great difference of age, when the man is aged and has rhythm problems and having sex with very young women, who are particularly impetuous. The most splendid case of such a situation, and known all over the world, has been given, but at a time the VIAGRA did not exist, with that of the sudden death of the old French Republic president Felix Faure during a relation with his mistress, the very young and spendid woman of a rich jewish painter, Mrs Steinheil. Whereas his major steward had called a priest, as it is customary in France when somebody is dying or already dead, and that this priest had asked the steward if the president has still his « relation », what has in French language a double meaning, here if he is still conscious, the steward answered on the spot:” No, my father, she left the palast through the small back-door of the palast“ !

So it can be said that there does not exist the “miracle pill of long life” and even not thanks to the numerous mineralocorticoids, secreted all by the adrenal organ which have initially been considered as to favour a longer life, because they present strong male hormonal character like the 19-norandrolonone, the norandrostanone, the epi-androsterone and many others. My old friend, professor of biochemistry Baulieu, the nephew of the famous French political Léon Blum, had made a huge propaganda in favour of the DHEA or Dihydroepian-drosterone he had synthetized and sold all over the world as being the « pill of rejuvenating »

and had cashed a fortune from it, when the sportsmen discovered its capacity to increase in a fabulous manner their performances.

Consequently they have used it at a fabulous frequency until doping scandals in great amounts were discovered, so that it has been forbidden like all other mineralocorticoids as the worst doping agents ever known. But it has been observed that by adding EA or Epiandrosterone to the DHEA that the energizing effect became ten times stronger, until once more this combination has been strongly forbidden, whereas the doping has never ended in spite of the every day becoming more sophisticated detection of all doping drugs even at the time other steroids of the adrenal gland like the androsterone had used, cut which was weakly androgen because it is a neurosteroid, a pheromone, which has no any doping capacity but determines the sexual characters because, injected, it counteracts castration.

In the early times of international competitions, about 100 years ago, such dopings were rarely discovered but the use of rapid physical techniques, mass spectrometry, nuclear magnetic resonance, fluorescence spectrometry and many others have permitted to detect the doping drug as well before than after the competition, as well in the blood, the feces and preferably in the urine. A lot of scandals of the athletes had resulted, who have been convicted to have used these mineralocorticoids or other drugs like amphetamines to win the race, what has had a bad repercussion on the morality not only on the individuals having been doped, but even countries, convinced to have favoured systematically, intentionally the doping, in order to appear as the most performing country, particularly dictatorial states. The most dramatic case of such a doping has been revealed in the most important cycling competition of the world, from the seven times winner of the Tour de France, the American Armstrong, who in spite to have been condemned to never take any more part in any cycling competition, had the outrageous cheek to attend the latest cycling competition in France, by pretending to be at the head of a foundation fighting... doping ! The proof of his doping had never been afforded during all these competitions but only long years later on with a new physical methods, permitting to detect in urine which had been conserved, but in which the new preliminary non-detected drug has been observed.

**Cancer's prevention:** It is necessary to say that cancer is not a fatal affection in all cases and that it is possible in many cases to avoid its development, and particularly the fatal metastases invading different organs. The greatest success to-day is the prevention of the cancer of the breasts of women at any age but controlling these breasts every year by simple radiography and by applying immediately at the first anomaly, through a biopsy and a tomography, a stricte surveillance of the detected cancer, and even with more sophisticated ones, like scintigraphy with technetium and removing surgically the beginning cancer, followed by many controls to a normal state of the breasts. But that is a rather costly practice which in France is free of costs, knowing that the French people is submitted at 100% to the payment of social insurance, what is extended to all inhabitants of the European union. That does not exist in USA and even less in India where the prevention remains in a rather rudimentary situation but needs to be introduced as rapidly as possible thanks to better oriented laws and a generalized adhesion to social insurance. But many cancers, like the prostata cancer even early detected is difficult to treat, even after prostatectomy, because the rate of metastases is rather high and that they diffuse rapidly in the bones provoking very severe pains difficult to reduce by drugs. And nevertheless the principle is to say, obligatorily, to never give up, at no any condition, to try to master this disease, because it is enjoyable to see so many improvements made in a permanent manner to solve the puzzle, the enigma of the cancer. An approach to fight cancer though

cancer prevention is that of the young 16 years American Jack Andraka from an high school in USA and whose uncle died three years before, when he was 13 years old. Not knowing anything from medicine and particularly not from the cancer of the pancreas of his uncle, he decided to make researches on it and visited numerous sites of the internet. He learned that the cancer genom of the pancreas is made by 8000 proteins which constitute the cancer and generate it. After having observed that only one of the genes, the mesotheline permits to obtain a reliable diagnosis, he decided to submit this element to experiences and went out to find a laboratory permitting him to prove his theory. And only after 200 demands and 199 refusals, he found finally one acceptation for this a little bit out of consideration candidature. That was doctor Anibar Maitra an American of Indian origin, professor in medicine at Baltimore. Jack developed a strip permitting to detect in the blood of the patients the cancer. It is exactly the principle to know the amount of sugar in diabetes, where the strip system exists since a long time and is applied to many other diseases, either if a specific antibody towards the given disease is known, or by some other peculiar component. It has the advantage to make the diagnosis in 5 minutes, that is at a speed 168 times more rapid than with traditional methods, 26000 times less costly that is 1 cent and 400 times more efficient than the traditional methods. Why should not other young men or other persons, scientists, medical doctors or not, find as well new solutions to make an early diagnosis of a cancer or of any other disease. The way is open to any situation provide is maintained the ineradicable certainty to have found the correct solution and... obtained the corresponding financial support. Why should it be a seldom event ?

**Cancer:** Anyway if we compare proportionally the deaths from cancer between India and France which has only 66 millions inhabitants, the number of cancers in India, where are living 1,5 billion inhabitants, is presumably 5,5 millions, what is dramatic and I suppose that there are presumably still more cancers, because the hygienic conditions are worse than in France. Considering only the cancers originating from the labour, the costs in France are esteemed to reach over one billion euros and if I try to relay this amount proportionally the the number of people in India it would be 25 billions euros. Is that possible? Is that credible? Is that acceptable? My question is to ask if anybody from the government or from any of the ministries, health or labour has ever taken attention to such a catastroph or taken any prevention in order to reduce the number or deaths? And here the RBT or Red biotechnology has to play an important role. In a document presented to Biocumbh, I had presented these prevention methods and hope that the Indian Government takes them in consideration, because it is chocking to see so many persons, often young, to become sick and dying for avoidable reasons.

And what is worse is that when the disease in India is recognized as a professional disease, the social insurances do not alarm neither the bosses nor the wage earners for the incredible simple reason that the law forbids it. From 40 cancers in one single factory in India where 17 « unforgivable faults » (?) had been observed, 13 died, but all forty stroke against an iron wall of justice because, according the penal code, their case was considered that they had made a « fault by negligence or inadvertance » or by a « lack of caution ». That are incredible and scandalous indictments rejecting all faults on the workers alone, whereas they have been submitted to inadequate working conditions undermining their health during a long wearing rampant procedure, whose deleterious effects have too often been hidden intentionally to avoid as well the dismissal of a poorly paid worker as to maintain a high income of the dangerous activity. The situation is so confuse that, if you kill deliberately somebody or even a great quantity of persons,

your condemnation is much lighter than to have killed your passenger during a car accident. The law calls that “crime through coolness”. But what has to be inducted is a “labour crime” which eliminates the “murderous consent” of the bosses.

There exist actually many examples of high technicity in biotechnology corresponding to new approaches to fight cancer, but there are so many theories and applications of new means, that it would be too long to mention them all in this presentation. I consider only one of these means, a very recent technique, that is to inject specific antibodies vehiculated by nanochips in a cancerous tissue of any type and to dismantle the cancerous cell so that it is ruptured in small parts which are removed by histiocytes whose function is to remove all fragments of cells, transport them in the lymphatics from where they are eliminated and thrown in the faeces. Both following figured, I don't know what's its efficiency because so many other means pretending as being the nec plus ultra but which have disappeared and no more valid.

The biotechnology has very important roles to play, so in matter of prevention of diseases provoked by the working stations. I don't have any data from India, but in France, each year 30000 workers die from cancer provoked by their work station, so many in glass industries because of the fine vitreous dust their inspire day by day and killing people long before they go in retirement. The same happens for technicians covering houses with vitreous glass, the asbestos but which is now forbidden because it provoked silicosis and a law obliges all houses to remove this asbest. And how to treat actually cancer ? I had been shown already in a lot of cases that the best way to be highly efficient is to bring near to the target, the cancerous cells, (Figure 4) a nanochips (Figure 5) a specific agent or an antibody which is introduced in the cancerous cell, guided by light or by a magnet and which makes « exploding » the cancerous cell. In some way it is the same system using a drone and to kill the criminal in a house or in a car with a guided bomb.

**Oberlin's cancer:** If I mention you the dramatic issue of the life of my very cheared boss, professor Oberlin, specialist in cancerology, the most marvelous open-minded man you could ever meet and who became chairman at the prestigious College of France after a truly adventurous carrier in the entire world and in his last place, in Iran, it is worth to be known for many reasons. He was the scientist, who, as the first, had developed a concept of the cancer based on antibodies of genetic origin, what still to-day has not led to find a better concept, fifty years after his death. One day he said to us all his devoted fellows, with his wonted humor : “You see, my dears, I have some pain on the liver, perhaps I have eaten too much excellent foot, having been invited so often to true festivals, what I appreciate very much, because they give me the energy to work day and night on my so fascinating problem, the cancer.” He, very tall, nearby a giant, looked effectively as a man giving the impression to possess an easy going, and he continued by saying :

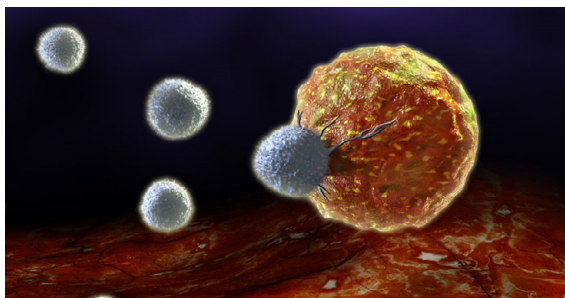


Figure 4: Cancer killing.

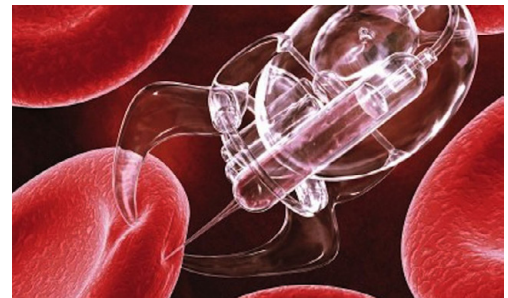


Figure 5: Nano-chips.

“My diagnostic is that I have liver stones in my biliary vesicule, which have to be removed”. Moreover he decided that one of his assistant should make the intervention. We attended with respect this diagnostic and this decision, and none of us could pretend to state another diagnostic, because each word coming from him was for us the word coming from God the Father.

And we accepted this statement as if he would possess the absolute truth, knowing that such an intervention is a very easy one, without danger. And without making any supplementary examination, radio or biological one, my friend, who was a surgeon, who became later on to be the president of the university of Geneva in Switzerland, made this intervention. We were all twelve around the surgical table, when the womb was opened and, this moment, I will never forget it. It was like in a nightmare when suddenly we were all sprayed with blood, like if the womb filled with blood would have exploded, the surgeon unable to see clear, attempting to wish away the blood covering his entire face and all our clothes, a moment never any film maker has evocated, even not in the film with the sanguinary Dracula, known all over the world for his diabolic methods to kill his captured individuals and from whom is simply known that he drunk greedily the blood of his captives from a cup made of a half a crane.

We were all be surprised, thunderstruck, dismayed about by such an incredible issue, and before the surgeon could find back his senses, Oberlin was dead, because it was simply impossible to stop the bleeding resulting from a giant net of veins covering the entire belly. And we needed a time to recover our senses, and then, we looked desperately each one on the other not knowing what to say when suddenly we began all together to bawl, lamenting one's misfortune of our so beloved boss. It had a deep repercussion all over France and during a long time the media published this dramatic story from which cannot exist a worse.

But that obliges me to say that the story of Oberlin was not finished. A few weeks before his death one day he called me to visit him at his home, what surprised me greatly, and when I was there, I asked him for which reason I was invited alone: “Oh, he said, you are a true Lorraine and me a true Alsacian and both regions have always suffered from a centenary dispute between France and Germany, whereas our francik language has given birth to the German language and that the traditions from Lorraine are exactly those from Alsace, so that you and me, we have a perfect reciprocal understanding of our concepts, which are all, but French, in a France which does not love us, not more than we love France. I was unbelievably astonished to hear such a statement from Oberlin because we had never had a discussion about this matter and I did not understand what exactly he wanted to say by that or to what it could led. And he continued by saying by suddenly addressing to me like if would have been a member of his family: Raymond because you are from Lorraine and have suffered so much, condemned to a

concentration camp, evaded, once more condemned but to death and once more evaded, what is an unbelievable performance demonstrating your ability to escape all danger, but having again been mistreated by France, named in a curious manner so young as an assistant professor what not anybody else in the entire world has become, I have an absolute trust in you » and, taking a deep inspiration, he said with a great emotion in his throat, “I have an heavy secret to reveal to you and which you will accept as I know you”. And he fixed me strongly in my eyes to read to find therein my answer. I became fascinated and I remained during a moment, the mouth open, not knowing what to think, what to say when he learned me to have a foolish son, responsible of his divorce, having been accused by his wife that it was uniquely he responsible of his foolishness, having forgetting his family and not have educated correctly his son but devoting his work exclusively to his researches on cancers. And he continued to give to me a lot of details as it seems not possible, a true confession as never I have obtained one in my so long life from anybody. I promised to never reveal anything from that in France as long as I am living. I observed that he became progressively more relaxed as if he had become delivered from a heavy load but from what no any element had leaked out in his daily life, what has demonstrated his unbelievable capacity to master his emotions and to hide his secrets, giving us all a totally different overview of his life. I considered that as simply fantastic and I agreed.

And he named me the legal tutor of his son what is not an easy function, because this son made often heavy foolish crises called Delirium Tremens, what obliges to dress him with a strait-jacket with the help of three to four male nurses and takes much time, lost for other jobs. When I have been brought in contact with this son, whose look was not so bad, I surprised Oberlin that my contact with him was very easy so that never somebody, who did not know that he was foolish, could think to have to do with such a type of individual. And this son behaved with me mostly totally normal like a normal man. That enjoyed greatly Oberlin as well as me, when the drama of the surgical intervention happened. But at that moment I became overladen with problems with the son in which interfered suddenly the former wife of Oberlin because of the important financial aspects as well as of inconceivable administrative problems concerning a man declared foolish. And that gave rise to trials without end what costed me a true fortune, until that one day a judgment was given saying that the charters made for the protection of this son were irregular and needed to be revised. But at the same time practically no more funds were available and me, having changed inbetween several times my address, and inspite having continued the contacts, one day all relations have been cut and all my efforts to be at the disposal of the justice to maintain my promise in favour of this son have been abolished. I don't know what has happened later on when the son as well the divorced widow died, where and when. That is simply the stream of the life but I will never forget Oberlin.



Figure 6: Protein anti-VIH from coral.



Figure 7: Virus and the immunity cell.

**Aid's treatment:** If we turn our interest to the fight against AIDS, the target to reach and to destroy its virus is totally different from the cancer because the cause is well known, namely the specific virus. Many techniques have been developed, therapeutics have been found but still cases remain difficult to be solved. One of the last ideas concerns the elimination of the dim-out of the VIH in order to permit the antibodies to combat the virus consequently by boosting the immunitary sytem. At the University College of London Greg Towers, instead to center his research on the virus itself, has considered a system which any human presents, simply to his immunitary system. In normal time, a viral infection provokes a reaction of the hidden cell which alarms his neighbour cells that a virus is attempting to force the defenses of the human body. The VIH is able to baffle the immunitary system and to skirt it, this “prowess” being possible thanks to the factor the host possesses, namely that the virus solicits in one step two cells when he penetrates in one cell of the immunitary system, what blocks the defenses of this cell. The target consists to reinforce the immunitary system in order that the VIH is localized. A coral sea protein plays here an important role (Figure 6), acting like a shield between the virus and the immunitary cell (Figure 7).

The researchers of the University College have exploited the furtivity of the virus of the AIDS to obstruct the way: they have modified the immunitary cells in cell culture with the help, among others, of modified cyclosporine, a molecule which without modification is used during organ transplantation in order to diminish the risks of rejection because it diminishes the activity of immunitary system. The already realized tests have given results more than encouraging since the modification has allowed to target the virus without diminishing the defenses what means that now the immunitary system is activated as it does it normally the organism. This new method may mark the clinching, be the crucial turn in the fight against the AIDS namely at the level of the therapy, since it does not concern the virus itself, but directly the organism itself. Moreover the scientists have now emitted the hypothesis to exploite the potential of this discovery to boost the

efficiency of all vaccines. This new scientific advance, in the fight against the AIDS, is simply titanesque: if this modification is applied to the vaccines, that would perhaps permit the immunitary system to function normally.

**The danger of the drugs probes:** To find new drugs its necessary to be sure that they are efficient in humans, what needs first at all assays in animals and then only assays on humans, what's called "human guinea pig assays" (Figure 8).

But sometimes contrarily to what was waited for, the effects are totally different and provoke the death of the voluntary people having accepted, in exchange of a payment, what's always dramatic. And these "guinea pigs" are mostly students in medicine or in pharmacy in their twenty years, in excellent condition and seldomly people affected by the disease which has to be treated. They are forbidden to make assays for more than 4500 euros. Myself having been what is called an "expert in pharmacology" even not being a pharmacist, I have made innumerable pharmaceutical assays called « expertises » but very few on humans, but nearby all on animals. But I always warned very early, as well the industrialists than the clinicians that I have observed one or several aspects which may be harmful and requested to take very much care, in order to avoid accidents. And effectively many times on human were observed nocious effects but having never conducted to any severe accident, because my colleagues, testing the drug on humans, were warned about the eventual danger so that they stopped immediately the test. But I have learned that too often accidents overcame in foreign assays so that the accidents happened because the clinicians had not been warned sufficientlty but having as well had accidents after the greatest care. When the situation became dramatic, too often the laboratories were accused for some negligences which they had never done. And such a drama happened a very short time ago in a town of France, Rennes, when a man died and the accident wounded five people. This accident has happened several years after another one in London in 2006 to fight leukemia in spite the Food and Drug Administration had decided that before a full assay is made a period of micro-assay, called "o" (zero) has to be made, in order to control the drug. Other accidents have happened in 2001 when a young women died, 24 years old with a drug against asthma, hexamethonium. A same accident happened in 2006 at London and another between 2010 and 2015, where 7187 persons have suffered, the life of 493 having been menaced whereas 197 have been faced to a severe handicap. Many accidents are due to the non-respect of the interval between two assays, the financial side haven taken overhead.

### The green biotechnology

**The life of the trees:** Since we don't find the secret of a long life in human made compounds, why not to see if we can find it in the vegetal world, where many sorts of trees become very old, but from which I consider here only three species among a dozen, whose age span goes



Figure 8: The human guinea pig.



Figure 9: Old-Tjikko tree 9500 years old.

from 10000 to 1000 years of age. That is firstly the swedish old tjikko, then the sequoia and finally the cedar.

The tjikko (Figure 9) has been discovered only in the year 2006, in the northern province of Dalarna of Sweden, at the basis of a mountain of an altitude of 910 meter, the fire-tree having only a two meters height and the trunk being between 10 to 20 cm thick. But in order to estimate its age, it was necessary to use <sup>14</sup>C and that revealed that it was at least 9500 years old. That means that it was born at the time of the end of the glaciary period at which time existed only bushes and that this "bush" transformed progressively in a tree of a rather small size which supports excellently hard winter. The other tree, the sequoia lives mainly in California in a sequoia forest where one of them is called the « President », because it dominates all surrounding sequoias with its 75 meter height and its trunk at its basis with an 8 meter diameter, having a volume of 1300 m<sup>3</sup> with an estimated age of 3200 years. The third oldest tree mentioned is living in the mountain of Lebanon, the cedar, and is aged about 2400 years, has a height of 30 meters and a trunk of 3 meters with a volume of 800 m<sup>3</sup>.

The problem with these trees is that they live so long being in the best health condition and the question is to find the cause of such a long longevity, what apparently nobody has until to-day tried to solve and which may give at least an answer to this crucial problem which tortures the humanity, because there is evidently involved a factor if not more, because there does, not exist problem without cause or without reason, and I wish that among my readers, someone will consider this question, and will try to give an answer, so by example through cell cultures from which exist so many types and which have the interest to not be costly.

Personally I suppose that two elements are implicated in this long life : the stem cells and the chloroplasts. I have explained to the student Akhilesh, who has been put at my disposal from professor Singh during my stay at Allahabad, in order to make my life easy, that the group of

scientists which explores this problem will certainly obtain the Nobel Prize if it will consider, at the same time, their counterparts in humans, the stem cells and the chromomers. I hope that Professor Singh will take this opportunity to go ahead. The future will learn if the indicated way was the correct one to reach the target : the Nobel Prize which is so cruelly missing to India.

**Surviving in space:** How to survive in the space? Such a possibility has already given by a very simple procedure developed by a garden devotee, and not a scientist, David Latimer (Figure 10) who had the idea to plant a vegetal called *Tradescantia* in a big glas bottle and to seal it for ever hermetically. That was 53 years ago. In the year 1972 he spays water for a last time before to close the bottle definitively, hermetically, in order that no one molecule of air can anymore enter or issue from the bottle. How was that possible? Simply by the fact that only the light of the sun is necessary for the surviving and that the growth of the plant needs the sun to afford then enegy the plant needs for its own nutrition and to continue its growth. The element able to transform the light in energy of is the chlorophyll containing the protein which absorbs the rays and it is this substance permitting the photosynthesis which produces the oxygen during the day and rejects CO<sub>2</sub> by night as any other plant.

But the peculiarity is that the oxygen est recycled and reused by the plant every day since 40 years. It is the same with the water which the plant absorbs and rejects, again absorbs and so on, unending. All

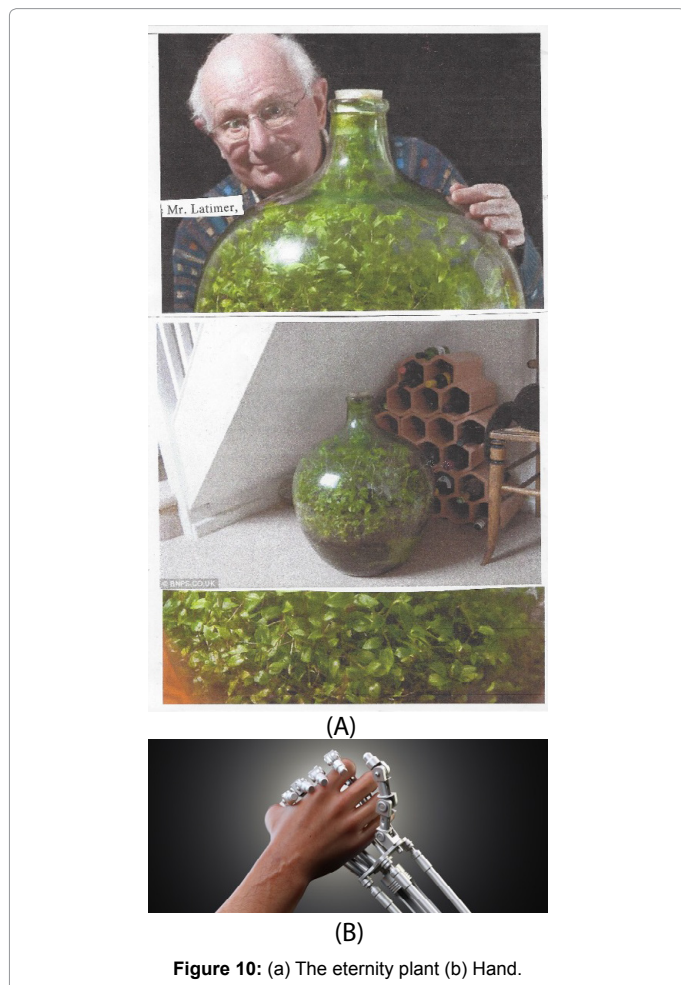
cycles are perfectly autonomous: the water is absorbed by the roots and rejected by the leaves in the air during the transpiration and it condenses at the lower level and the cycle begins agains indefinitely. The photosynthesis creates oxygen and adds humidity in the air of the flask which accumulates to produce "minirains" which descent on the bottom. The dead leaves become rotten at the bottom of the flask and produce in a natural manner CO<sub>2</sub>, essential for the photosynthesis furnishing at the same time all nutrient elements for the root. This exceptional case has become famous all over the world and the NASA is greatly interested in this concept for its use in spatial flights not only in the perspective to have en autonomous source of production of oxygen not needing to have reserves but also to produce plants for the nutrition for the astronauts who will, one day in the future and what will come earlier than we can think it, live as well on the moon as on the planet Mars where robots have already be sent but where the most recent, an European, has not answered at its arrival on Mars and seems to have crashed. But many other projects are in view to reach Mars before two years, as well American than an private ones so from Tusk, the billionaire who produces the high speed train Overloop and the autonomous electric cars. Already a flower has floused in the space, vegetables have been grown and now the NASA is under way to try to produce potatoes. Why not?

### The blue biotechnology

**Water, the source of life:** The Blue Biotechnology is as well the largest domain of the entire biotechnology if considering that the seas cover practically 95% of the entire earth. And in spite of that we have to consider that the first problem to be solved, is to have enough water at the disposal for millions of people for surviving, the water being the source of all life, not forgetting that we are born in water, in the chorionic liquid, our body being made with 63% of water, being grown up first with a liquid, the milk, the first living animal on earth being issued from water, where its ancesters were living and where still live a multitude of animals and fishes we use for our nutrition, the water, if shortened too much, like in desert, provoking your rapid death. But this water is still, to-day, not at the disposal of all human because it is known, that in the year 2015, 788 millions of human do not have access to correct drinking water, that means to water pure like rain water and that many of them live in zones where underground water exists but without the possibility to have access on it and if they drink this water, they become sick, because it is mostly polluted, filled up with bacteria and virus and even if not completely toxic, which kill over ten million people each year with infections of all sorts, mainly of the gastro-intestine area what may happen as well in insalubrious environments. The other big danger is the presence in the waters of lead, copper or other metals which are highly toxic and difficult to remove.

Will it mean that no pure water exists on earth than those known to day and not sufficient enough to satisfy the needs of the human? Researchers from the North Western University in the USA have demonstrated that at a depth of 640 kilometers exists a mass of water three times as important than all seas united of the earth. This water is enclosed in a cavity made by rock at high pressure, the ringwoodite and the researchers hope to explain how the oceans were formed.

The staff of scientists under the direction of the mineralogist Steven Jacobsen has used a group of 2000 sismographs in order to study how the sismic vaves generated by the earthquake moved inside of the earth. The speed of these vaves has changed in function of the rocks through which they pass and the humid ringwoodite has a peculiar effect on these waves. Steven has reproduced at the level of the laboratory this experience and came to the highly edifying conclusion



that, if maintained under extreme temperature and pressure like is the mantle of the earthland, it leaks out water and is trapped in a transition zone between 320 km to 640 km depth. That means that contrarily to the affirmations, the water comes from satellites having hit the earth, the oceans have effectively an underground origin, but still many tests are necessary to confirm completely this observation, whereas in the moment this water is existing only under the USA, but it has still not been demonstrated that it exists everywhere, moreover because it's impossible to have access to this water, the techniques of drilling remaining limited to maximally 20000 feet, that are about 7 km, which are used much more for the fracturation under high pressure in order to obtain gaz and petrol. Its therefore still like a mirage and no body can live from them. Now which are the solutions? They are four : one by using electrodialysis for rather small quantities, one by water distillation, one by inverted osmosis and one using enzymes.

The method of electro-dialysis is used in countries where underground water exists and is extracted by pumps and seldomly directly visible. It consists in the method which lets pass a not too highly salted water through two electrodes, which attract each the ion of an opposite charge and "cuts" by this manner the salt, whose molecule made by Cl-Na negative ion, Cl is attracted to the positive electrode and the positive ion, Na<sup>+</sup>, to the negative electrode. The resulting product is filtrated through a collection of fine membranes, so that is obtained a water which is still impure and very poorly salty, and has to be sterilized with ultraviolet rays to eliminate bacterias and virus. But it has often a disgusting and unpalatable taste, which cannot be eliminated easily, even not with ion exchangers, what are polymers attracting small chemical components. Such water is just necessary to maintain the life.

Such a system has been promoted by example by the MIT of Massachusetts through a program from the USAID and what has permitted to a group of scientists made by Natasha Wright, Amos Winter and Robert N. Noyce, to win the prize, which is not really an invention, but a combination of existing techniques, called Jain Irrigation System which is applied in 2016 for the first time in India. But it needs aside this a pump and a solar panel to catch the light and to obtain electricity which is stored in a battery which permits the electrodes and the pump to work. Such a system is rather rudimentary but permits to deliver drinking water to only 2500 to 5000 people. Its also a little bit costly and cannot be generalized when is considered that at least 388 millions human have not access to clean and pure drinking water. This program in India can be relied rather to a propaganda activity, showing the humanity of USA than anything else and looks as if I would pour a drop of water in an ocean.

May I remember that France has gifted to India in the year 1989, at the occasion of the bicentenary of its Revolution, more than 5000 handpumps all over India. I was present at Chennai when this gift has been attributed to Indian peasants and I remember the violent dispute from the rich tycoons of Chennai reproaching to the donators, mostly pharmaceutical industrials, to have "literally thrown in the air" an immense fortune in fireworks illuminating the bay of Chennai, instead to have used this money to furnish 5000 other handpumps, whereas themselves had not spent one single rupie to make pump gifts to the peasant. This behaviour resulted from a big scandal, where the French company Specia, having gifted much money, had offended severely, by lack of understanding of Indian customs, the main personalities of the Indian government by behaving as if they would have been his servants, so that the tycoons have found their revenge in claiming against the

donators. A truly curious world because that is not the manner to give to people water through such a manner to behave.

The next technique is that of the distillation of the sea waters as does it Saudi Arabia and some other countries having enough gaz and petrol. The procedure is that established as at the common mean to make distillation of fruits to obtain ethanol used to make liquors of all sort and in medicine but here extended at a large and even enormous scale. The installation is impressive because each time several cubic meters salted water is boiled whose vapor is refrigerated when migrating in another cylinder and the vapor is transformed there in pure water That needs enormous quantities of electricity and is available only in countries with much gaz and petrol.

Very recently a Frenchman has developed a new system to produce per day 1000 liters drinking water from any polluted water, called Safe Water Cube, needing neither electricity nor maintenance, simply by placing different levels of filters, in a metallic cube, the lowest being a vitroc ceramic one pretending to remove bacterias and virus. He has sold already several of them to different countries of Africa. I have not to judge about the validity of this system but the present of the lowest filter made in vitroc ceramic even with ultra-tiny pores makes me questioning if really it eliminates bacterias and virus.

**Inverted osmosis:** This technique, the most used in the world to produce water for the agriculture is that of the inverted osmosis. Its principle is to provoke in steel cylinders a high pressure of about 50 to 80 bars whereas the osmotic pressure of the salted water is about 60 bars so that the salt is practically separated by extraction directly from the sea water. It goes out from the fact that the water from two solutions of different concentrations separated by a membrane goes from the more concentrated solution to the less concentrated until an equilibrium is reached from both solutions. On the other hand if an hydrostatic pressure is exercised in the part containing the higher concentration of salt, the water passes in the part of low salt concentration and increases the amount of low salt concentration to nearby pure drinking water, still a little bit salted. But with the industrial system the obtained water is perfectly pure without any of the elementary salts needed for the life what means it is rather toxic so that these salts have to be added before to inject the water in the circuit what makes that the costs of this water is rather high and has a cost triple of that from western Europe. But this system is applied only at a great extend, in countries having enough gaz and petrol to produce the giant quantities of electricity needed to obtain these pressures. The most splendid example is that of Fujairah, (Figure 11) one of the United Arab Emirates town, where does not exist one drop of petrol nor one cubic centimeter gaz in its entire zone but whose sheikh receives the necessary elements to produce first at all great amounts of electricity and with it, giant amounts of very lightly salted water for all other members of the arab coalition. The same system is used at BAHREIN but a much smaller scale. For industrial units exists even smaller units (Figure 12). It permits all the UAE to be green as it seems not possible, what is in an enormous contrast to all other arab countries.

**The enzyme procedure or dure:** That is a procedure I have invented in the year 2011 when one day by making some investigation on enzymes, my preferred theme since ever, the same day I have read a paper about the need of much water in the desert which explained how by night it was possible to recuperate some water when there was no water source around. And me, I said to me, I will do it better and thinking day and night on that, I came to the conclusion that enzymes can be used to do what inverted osmosis is able to do, but without pressure. It was naturally ridiculous to pretend it, whereas enough

arguments and proofs existed about the unlimited power and capacities of enzymes without which the life does not exist nor continues to exist. And in a very short time my system came in sight in my brain where is "born" an enlightenment of my spirit concerning the manner to proceed namely to use a steel cylinder in which turn five other cylinders made by permeable vitroceraamics in order to permit the passage of water from the periphery to the inner cylinder from where the purified water runs out.

My idea was to use sufficient resisting tissue, practically made by raw silk in which I grafted modified enzymes, insoluble enzymes, the so called reticulated enzymes, which I can produce by different manners, so by "fixing" them in formalin to become reticulated enzymes, which are grafted on these tissues. I decided to recover each inner cylinder



Figure 11: Fujairah's water desalting town.



Figure 12: An industrial inverted osmosis.

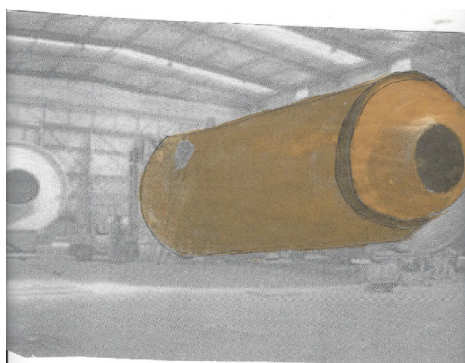


Figure 13: Dure in project.

on both sides with the tissue containing reticulated enzymes using different types of enzymes having the capacity to remove the salt. That represents ten types of enzymes having each a specific quality. The water is introduced in the outer part of the cylinder and glits successively in each compartement through the vitroceraamic cylinders, depositing smoothly the salt and reaches the central part of the cylinder practically having lost all its salt which was accumulated progressively in all compartements.

The water is issued, practically desalted, from the inner cylinder and can be directly used without any modification but only for spraying and not for drinking, because it has not been sterilized in this perspective, whereas it has been submitted before to enter in the cylinder to a passage over a series of tissues filters which remove gross particles as well as over a bed of powdered carbon to eliminate other parts of suspended elements but really not bacteria and virus.

I present a model of the industrial cylinder (Figure 13), from which exists a very reduced prototype made in Netherlands. Such a cylinder turns slowly and smoothly, on its axis, permanently, day and night, on wheels on its basis permitting to eliminate separately the desalted water and the salt in such a manner that the salt does not block the compartments. The electric energy is provided by ten eolians turning day and night so that no any gaz, petrol or from coal coming energy is needed, the wind blowing in all countries, day and night, not costing any cent and being at the disposal of whom wants to use it. It cannot be cheaper. The use of wingless eolians are recommended because the eolians with wings provoke each year the death of a great number of birds and this system has to be 100% respectful of the environment.

The great amounts of enzymes necessary to be used under their reticulated form are taken from different very easily obtained sources whose products have to be treated biologically during several procedure. First what is a reticulated form? It's what is called an "eternal" enzyme which is not soluble, whereas all enzymes are soluble and would under their initial form be rapidly washed away. Second, why silk? Because it is the only natural tissue made from an animal having proven an excellent capacity to fix, in fact to "graft" reticulated enzymes, all other tissues probed until now having rapidly lost their grafted enzymes. It seems because the silk, being a natural product, seems to have an irregular protein structure permitting the enzymes to be fixed in all directions but not having made until now its study, having no quantitative electron or ionic microscope at my disposal nor any of the physical techniques I used when I was active in the university.

The third aspect is the source of these different enzymes. That remains an absolute secret as so more that great quantities of different enzymes are necessary to realize this desalting activity and which are very expensive if anybody would know which ones are used, a gram costing 100\$ and more whereas is needed for each layer over one kilogram, that is 10 kg for each cylinder. But my source permits me to obtain enzymes in unlimited quantities at a price of a few euros per kilog so that the total expense result mostly from the machine itself, with its six cylinders, the outer cylinder, being made in steel, unable to rust and not attacked by the salt, whereas the vitroceraamic cylinders need a special manufacture in order to become porous, permeable to water.

That I reveal partly the functioning of my system demonstrates that I don't fear any copying of it because without my reticulated enzymes it can never function, the silk tissue being simply an help totally unable to remove the salt. I have developed a rather simple and very cheap system in comparison to absolutely all others. And that will learn



eventual copiers of my system, like the company Degremont and the company Procter and Gamble to let their fingers from any assay to copy my invention otherwise they will learn bitterly, how much it costs to be dishonest as both have, done it previously, the first by trying to use one of my patents to clean the Ganga river but having lost a millions of euros affairs because unable to apply the patent by having misunderstood its most specific parts, whereas Procter and Gamble have simply stolen my patent before I had deposited it, based on « Glutton Enzymes », mixed in washing powder to remove the blood dots and won, until today, 75 billions euros at my expenses, which the death has not permitted to the robbers to take them with, them in the eternity.

I wait that some Indian tycoon takes interested in my invention and then he will become the leader in matter of water production at a very low price if the cost of my machine is compared with that of the inverted osmosis. My ambition is to make all deserts green and to produce unlimited amount of vegetables for a permanently growing world. It will interest as well all islands needing to have water in unlimited quantities for their vacationers. Sea water does not cost anything, air does not cost anything. I furnish the link to make anybody happy. A prototype of my machine exists somewhere in Netherland, two meters large and 50 cm diameter whereas the true machine will be 30 meters long and 5 meters in diameter. Please calculate how many cubic meter spaying water will be produced in 24 hours knowing that in 2015, the total desalinated water produced for the seven emirates was 1150 million m<sup>3</sup>, compared to 385 in 2005. How much water is my machine, named "Dure" for desalting unit by reticulated enzyme, able to produce per day if permanently filled with sea water or how many machines are needed to produce as much: per month in six month?

**The richness of the blue technology:** It would need an entire book to describe all the products the humans may extract from the Blue Technology or use in it. They are quasi unlimited. There are two main sources : the first what floates over surface of the seas and the rivers. In a few words : first on the surface the innumerable boats of all sorts, small and big who carry humans for their pleasure in immense boats able to transport over 2000 people for their leisure, the most recent of them having been able to pass from the Atlantic Ocean to the Pacific Ocean through a Northern way to the fact of the melting of the ice-pack. The other big ships are such ones loaden with oil, gaz and packages called containers in which all sorts of goods are transported so that an immense fortune is transported from one point to the other but only at the profit of the owners of these ships or their companies. Other types of « floating » or anchored vessels are the oil-extracting off-shore platforms reknowned for their too often happening danger to pollute the seas, whose consideration belongs to the Yellow BT. Then are the innumerable sports boats for private and sports uses what are the sources of big deals.

The second sources is what is present beneath the surface : all the fishes and mammifers which are living there and are the richness of the highest value together with plants from which are extracted all kinds of drugs. The greatest activity is the fishery permitting to millions of people, mostly individuals to insure their every day existence but who are in competition with more and more exciting great fisher boats using giant nets for their fishing activity but who are responsible to fish species becoming rare or even protected, like wallfishes. In many rivers where some kind of fishes have become rare the tendency is to reactivate the rivers by using fish farms to grow up the yearlings. But by pity there are as well used fishes and mammifers in leisure parks, like the human friendly dolphins but who have been more recently forbidden.

### The white biotechnology

**The inventions:** As a general consideration this domain is the

most important for the economy of India because India is linked too much to the patents of other countries what does not permit a sufficient independance in the economic domain and what makes India not free from constraints to develop new techniques in all domains, animal and vegetal, this problem having until to day not be considered from the politicians as having priority to receive subventions, so that it remains unsolved until to-day. And even if it is not urgent to solve this important question it belongs to the science to find methods in biotechnology to solve it, sooner or later, because it is irritating to observe a phenomena, to know it's causes but that it is not possible to remedy to it. I think that we have to go the way of an Alessandro Volta, born at Como in 1745, who was the first to have been able to produce electricity by superposing copper and zinc discs, constituting a battery of 1 volt, what anybody can reconstitute very easily and what I recommend to do. This ultra simple system is at the early origin of the production of the actual immense quantities of electricity used to day in all domains and without which the machines would not turn, the nights remain dark, the trains not run and the relations by phone not be possible. The case of VOLTA is simply one illustration of the tale of Ali Baba and the Forty Thieves in the arabic story of the One thousand and one Night, where the expression "Sesam, Open", opens the door behind which is a fabulous treasure. And it is remarkable to know that most of the modern techniques or systems are based on fortuitous events. Do you want that I give you three drastic examples?

The first example is that of the zipper present to-day in all types of costumes, trousers, bags and so on. It came from the successive inventions from three Americans, the first Howel in 1851, ameliorated by Judson in 1893 and finally by Sundbach In 1912 what is an invention in three steps which needed a span of 61 years to become really useful. The next is that of the observation in 1948 of a Swiss engineer De Mestral, whose dog run all around in the campaign and whose hairs, very long and wooly, became filled with burdock flowers. And after having removed them he looked what may have fixed so strongly these flowers with the hairs and he discovered that there were very tinny clingsings, burs, a kind of crampons responsible to incurvate the hairs on which they were fixed. Immediately he came to the idea to create a structure of the same nature as well in metal, iron, copper or in plastics for what he took a world patent in 1955, called "Fermeture Éclair," also "Flash Closing" so that exists no more any zipper in the world without paying him a fee so that he became one of the richest men his life along. From the first day observation to the obtention of the patent, it needed 7 years. The third story is that of the ball point, the Pointe Bic, invented from the hungarian Biro in the year 1938, but ameliorated by the French baron BICH In 1950, and from which three trillions pieces have been sold in the entire world at a very low price but from which a very small part represents the fee in favour of the French baron Bic. Here twelve years have passed from the initial invention to the end product. But Bich has gone farther by making razors and many other products useful, all over the world. He has become one of the richest men of the world but you would be stupefied to see where and how he is living in a suburb of Paris, proving that he has not become crazy like 99% of all then tycoons of the world.

**Blood pressure monitoring:** That is a typical hybrid biotechnology because on one side it concerns the worst world disease which hits about one fifth of the entire adult humanity classifying the BPM in Red Biotechnology and on the other side a typical technological high tech level performance without which the diagnostic of the disease can't be established on the spot, ranging this BPM in the White Biotechnology. But if we consider the problem as such, in fact it's not what is called a disease in the common language but simply a symptom of a disease,

the high blood pressure called commonly Hypertension or HTA. Hypertension of the arteries. It results from the progressive overloading the red blood corpuscles of the blood stream with fragments of cells disrupted from the walls and mixed with all sorts of cellular and non cellular elements, fatty bodies of different sizes and of various hardness, so that the blood becomes less fluidy, the circulation being slowed, what obliges the heart to pump with more energy, what makes that it becomes hypertrophied whereas at the same time, the vessels become stiff, hard, less elastic, conducing to what is called arteriosclerosis.

It hits one adult on five, between 50 and 65 years and kills him, suddenly, without having warned him by any forerunning symptom and is called therefore the "Silent Killer". That happens always when the person does not know that he is hypertensive, has never measured his blood pressure. But it happens as well in individuals knowing that they are hypertensive, so when they neglect their treatment by not following regularly the given therapeutic or even having given up because most of them, having no any disagreement from the HTA, think it is also not necessary to ingest drugs which seem to have no any effect on the disease. That is called « lack of confidence » towards the medical practitioner, because the patient consults one after the another multiple practitioners, each giving a different blood pressure indication, a different advice of the degree and of the evolution of the HTA, another drug so that, at the end the patient finds him totally up side down and do not more know any more what to think and whom to believe, having become completely perturbed. And the reason is very simple : none of the medical practitioners has a reliable ABPM - if he has one - also because the measures of the practitioners have not been performed at an exactly the same time what is as such not being a proof

of the concordance because of the considerable variance of the blood pressures the day along, even one beat from the other. Therefore we can say the hypertensive individual presents a very curious, peculiar individual profile, which differentiates him from all other patients and what is finally responsible of the too numerous deaths. The solution is consequently to have an ABPM having all exactly the same capacity to measure and that is the Holter Blood Pressure<sup>®</sup> or HBP<sup>®</sup>.

And I have created and patented one in 2014, what is an absolute new monitor for measuring in an ambulatory manner the blood pressure because it is able contrarily to absolutely all other monitors to measure the more or less 100000 beats of the heart in 24 hours, having changed completely the components of the monitor I had built thirty six years ago, in 1980, by my own hands, exclusively with my money and without the help of any technician or engineer, and which I have used during one full decenny with great success in a luxurious informatic medical centre at Paris. By pity I had never had in mind to produce my monitor industrially so that the monitor called Cadmotron<sup>®</sup> has been used exclusively in this center, having proceeded there over over 5000 24 hours records.

And I present here two most representative examples of its activity, Tensiograms<sup>®</sup> which the Holter BP<sup>®</sup> will reproduce rigorously presenting exactly the same aspects as those obtained by the CADMOTRON<sup>®</sup> with the difference that the Tensiogram<sup>®</sup> will be based on 100000 heart beats, whereas the former monitor measured « only » 40000 beats, the new HBP<sup>®</sup> giving an 100% outcome of the monitor, reaching the perfection and giving to the Tensiogram<sup>®</sup> a 100% certainty to establish correctly the diagnosis of hypertension. In the Figure 14, the upper Tensiogram<sup>®</sup> is that of an highly active international businesswoman, 45 years old, living in a permanent stress and who is permanently hypertensive. She presents a lot of Pikes<sup>®</sup> and because she has forgotten or has disdained to take her anti-hypertensive drugs, she is killed by a stroke at a moment she has presumably presented very high Pikes<sup>®</sup> like you can see such ones at noon, which can be considered as premonitory signs of death and which are reproduced at the moment of the death. I have several cases demonstrating this relation. Some patients having died during the monitoring. The death of the president Felix Faure happened probably in that way during his relation with his mistress, having shown with my CADMOTRON<sup>®</sup> that sex produces always an hypertensive Pike<sup>®</sup> in all males even having an absolute normal blood pressure profile during the rest of the 24 hours.

The lower Tensiogram<sup>®</sup> is that of an air flight controller 39 years old- whose Tensiogram<sup>®</sup> is absolutely normal, but who claimed to have headache during work. He has consulted four or five practitioners but always outside of his working time.No any anomaly has been found with the blood pressure. But a control with my monitor during the work time showed that his blood pressure presented during his head ache time, important Pikes<sup>®</sup>, which disappeared thanks the therapeutics. But after a long time, feeling well, he forgot or disdained to continue the therapeutics and one day I learned that he had died during his work, I suppose to have presented high Pikes. This example proves that any normal subject can die from a single attack of hypertension resulting from any kind of stress.

Anyhow it can be observed that I needed 20 years before my first BP monitor existed operationally, and it needed 34 other years to reach the perfection and my greatest wish is to build it in India to control the blood pressure of its 350 millions subjects susceptible to have Hypertension and it will be only later on that this monitor is exported in the entire world so that India becomes the center of the production of this monitor and can be considered as the world center of fight

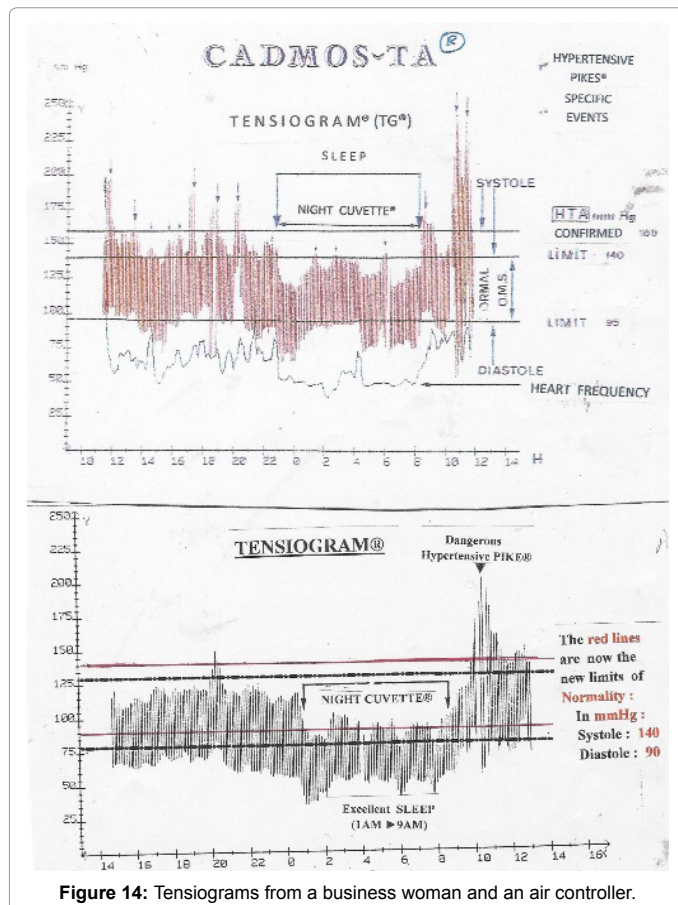


Figure 14: Tensiograms from a business woman and an air controller.

against hypertension. That I do that in India and not in France has a deep emotional reason, and can be explained through the different motivations I have established in this paper after having visited India 34 times what is my 135<sup>st</sup> trip around the earth, having taught and made conferences in more than 100 universities of the world. The financial economical output in favour of India, will be considerable not alone because of the numerous working places it will create but also of the creation and the existence in India of an high standard medical industry existing even not in USA.

**The 3D printing:** Now I will consider another typical invention made through the genius of the biotechnology. That is the 3D printer permitting to create real and directly useful anatomical and other structures of all sizes and structures. An interesting example e is the reconstitution of the beak of a kingfisher eagle having been destroyed by the shot of some poacher but what has permitted to the eagle to find back its use whereas he became unable to mangle its prey. (Figure 15, up). The man who has found this bird made all what he could to find somebody helping him. And he found Jane Fink Cantwell, a passionate of eagle, emotionned about the fate of the bird called Beauty which had to be euthanased because unable to feed herself and consequently to survive. So with the aid of Nate Calvin, an ingeneer at the Kinetic Engineering Group, she decided to reconstitute a prothesis of a beak made on order. And with a staff of practitioners, scientists and dentists, Cantwell and Calvin, she passed over 200 hours to conceive a 3D model of a bionic prothesis made of nylon (Figure 15, below), using a 3D printer which was used until this day only for humans to constitute protheses to restablish, among many others, terribly damaged faces, arms, legs, cranes. The result is striking.

But the prothesis was not totally sure to permit to Beauty to return living in the nature. The Foundation Birds Prey Northwest, which took care of her, has observed that the damaged part of the beak had begun to grow again and the specialists did no know if the beak will one day return to the normal, but waiting to make a new prothesis, better adapted to this change, to make that Beauty is able to feed by herself. And what is her preferred dish? Salmon cut in slices which she absorbs with an evident satisfaction !

From that point on the 3D printer has taken an immense importance

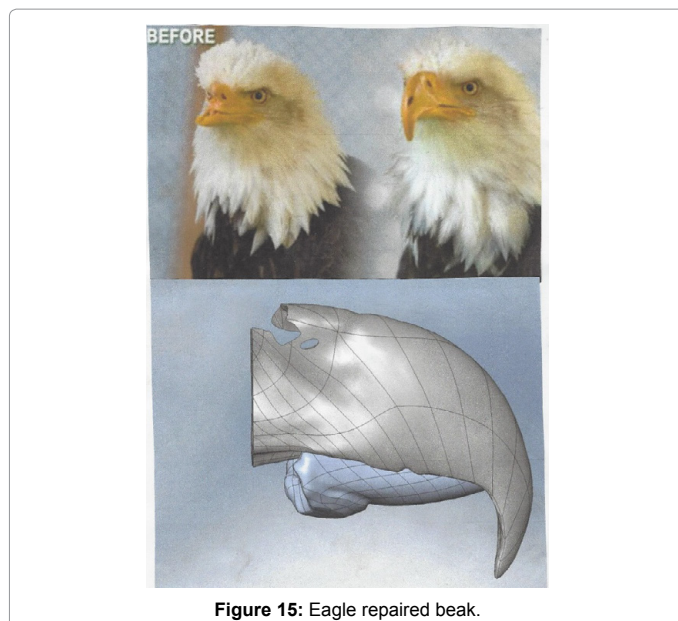


Figure 15: Eagle repaired beak.



Figure 16: 3D crane after motor car accident.

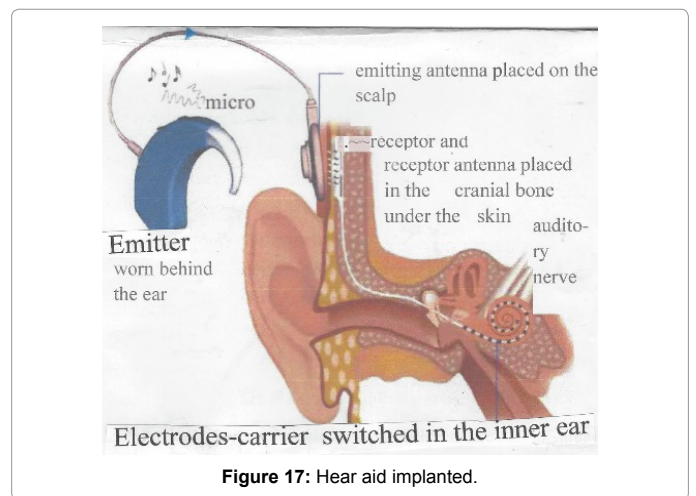


Figure 17: Hear aid implanted.

to produce all kinds of artificial structures like even an human plastic crane (Figure 16) using as well all sorts of tissues, even soft ones and which has extended to industrial applications so to build a house, or a wing of a jet in few days, whereas it needs months to make the same in the traditional manner. What is remarkable is that the 3D printing is used to produce robots of all sorts what, linked with High Tech, has produced recently in Japan a very flexible humanoid robot called Kendoro, who is able to make many push-ups, the body maintained by the hands and the tiptoes and who is even able to sweet.

An element which is difficult to range in a specific biotechnological system because on a crossway between the red and the white biotechnology is the most recent hear aid (Figure 17) made by a very tinny microphone introduced in the spiral of the human inner ear after a surgical intervention by opening the crane behind the ear. Such a delicate surgical method is rather dangerous because of the danger of infection, of meningitis or of facial paralysis and even if gives much better results than the most recent external hear aids, fails, from time to time to reach its target and makes the subject totally deaf. Moreover the cost of such an hear aidvis ten times that of an external, one, that is over 24000 €, not included the numerous clinical long wearing tests., but by chance reimbursed by the Social Insurances, at least in France.

**Artificial intelligence:** Now I consider a little bit the artificial intelligence going out from the fact that all living animal possesses an intelligence from the virus to the man in spite they do not have all the same system to make it functioning and to express. It would be too long to consider this striking problem which would need many numerous pages to be considered in all its fascinating facettes. But nevertheless it needs that I remember you very recently information that the supercalculator called Deeprint has won the play in a play called "Go" by beating the European Champion whereas it waits to combat



Figure 18: Smartphone-group.



Figure 19: Life creation of babies in artificial incubator.

the world champion, the Chinese Lee Sedol, this machine having already beaten in 1997 the world champion of skat, Gasparov, having jeopardized as well in 2011 two champions of the Watson Program Board, having been able to learn alone the Video program established from Atari without the help of a human, during the issue of the famous play, the "Space Invaders", what proves that the machines become more and more intelligent, but even not becoming as far not intelligent than a boy of 7 years, because this artificial intelligence is actually limited only to highly sophisticated mathematical combinations and no any actual machine would be able to learn the program of a boy in an elementary school.

But there exist already a lot of machines helping the activity of the human in the daily practice like the machine for clothes-washing, for baking the bread, to make the coffee and a lot other machines, most of them in the domestic programs which are all limited to a rather small number of orders which can't be called possessing really an artificial intelligence, but only some part of it. The great development of Robots in the car industries permits to obtain a higher production of cars at a lower price, practically without human presence, what begins already to provoke social problems due to the fear of the workers to loose their job.

Therefore I limit my proposal to a small part of this intelligence, so by example what does it mean to pay attention, like you do it in the actual moment. Shortly said it is an intellectual attitude from human and some animal to hear news having interest for their government, for the culture in humans, or simply to learn what happens or to receive an order during training and dressage. The length of the time to pay attention results from the topic itself and if what is presented is not well expressed, too difficult to follow or to understand, rapidly you loose your interest in the speech or in the lecture of the book, but what happens as well, by attending a movie session, a theater or a sport. Its amazing to observe that the speeches of dictators are always very long

and the question, never solved, remains to know how much interest it had for the listeners.

Susan Schneider after Hawkins has written a book on « Alien Minds » considering artificial intelligence what Shostzak, the astronomer has as well interested. They consider that it results from the improvement of the biology and what Kurzweil names as the « singularity » of the species. Anyhow most of the specialists believe and pretend that artificial intelligent in the space, may not result from really living matter like the humans and I think the best is to wait that the « space invaders » come to visit us, but that the possibility exists well, that the humans with the new transport means reach exoplanets to discover them. But that is not to-morrow the day !

A psychologue has tried to find out how much people, forced to attend meetings from dictators, pay attention to what is said, but having no any interest for anybody, but being only words of propaganda endless repeated. But he has observed that always the last words of the dictators had the highest impact on the population which retained them in their spirit and expressed it by crying loudly their approval, what was always in fact the decision of the dictator, so by exemple to declare a revolution or a war, giving the impression that the decision came from the folk. That is called « induced psychologic behaviour », a typical example of « artificially induced intelligence », what corresponds to the subtle hidden technique of a translation to a group of the decision taken by one man, even if the people has not retained most of the « lesson ». And such a mechanism exists since a long time, long before the term « artificial intelligence » has been pregnated, conditioned with the development of new means of communication.

The most dangerous « substrate » for artificial intelligence to-day is nothing else than the substantiated dictator called Smartphone (Figure 18) made to diminish the attention of a subject in and to all matters, as it may be observed every day everywhere, transforming the individual in a robot, deeply enclosed in an artificial world, cutting all direct contact with all others, as it happens in the busses, in the trains, in the streets, in the metro, so that it can be said that its user has become « absent » and to have lost all sense, all contact with the real world. Remember that this situation has happened not so a long time ago with the emergence of this diabolic instrument whose first model was issued in the year 2000, followed by the facebook and the twitter in 2004, the iPhone in 2007, the Instagram in 2010 and a lot of other systems of the same type, which are so many as to loose the reason.

But the changes did not afford the far-reaching consequence waited from the intrusion of these means and which were waited for or attributed from all sides but from where Microsoft and Apple are the great responsible of this situation and even if they have made very recently honorable amend and apologized about such a situation. It exists nevertheless a giant fault deep like in abyss in this apology that they have not paid any attention to the human factor outside from the pages studied by the informatic undertaking or even useful for the red fishes, as says it a location. And that has a reason, namely that the attention is notion unbelievably difficult to study and the manner in which it is tested influences enormously the obtained results. In a general manner the science puts in exergue an effect of the modern technology which includes the biotechnology on our cognitive capacities. So contrarily to the common sense which pretends that our senses are blunted though the use of these new techniques, the results of these researches have demonstrated that our capacity of attention is increased, because, only focused on one thing. So look how a boy is concentrated on a play on his smartphone. He lives in « another world ». Are we permitted to extract him from it without making damages in his mind, in his behaviour ? The

elements captured from the screen impregnate his brain with this new source of information which may become dominant and is responsible that he puts in doubt the lessons given by the parents. That explains that so many young people lose progressively confidence in their parents finding them « outdated » and go another way, not revealing it to them, so that their attitude is no more « transparent » towards the parents who have lost all power over their child. The most evident, actual, example comes from young adults, not exclusively Muslims but impregnated from their concepts who are attracted to the Jihad so that it was seen, how strong may be such an attitude, a few days ago, when an abominable crime has been committed by a boy of 20 years who has shot down, in presence of the television, with a bullet in his arm, in the brain of his own mother, who had implored him to leave the DAECH or IE (Islamic Emirate). It cannot be worse.

On the other hand, regular video players present a higher attention capacity to view the screen than no players and that no-players who begin to play, improve this sense and whose world « on line » is more and more occupied by « spaces » in which the advertisers attempt to attract their attention with their products. The same happens with the public spaces filled up with publicities in order to capture its attention and to make it truly captive so that progressively the public becomes as well enclosed in a virtual jail. Look, how difficult it becomes to avoid the innumerable publicities you find every day on your screen and to fight against them in the publicity battle. This battle begins to be a luxury in our modern world. And from what results this invasion worse than the invasion of India through the Germans, the Persians, the Arabs, the Pakistanians? Simply from the fact that having accepted a first information about some publicity which interested you, you simply opened the dam of the floods which submerges you now definitively. And how was it possible? Simply by the fact that a mention written in so small characters that you did not pay attention on them, said that by accepting this information you give him permission to use it as « cookie », useful for the collection of advertisers participating to these publicities. And your fate is sealed, damned in all eternity. Is that not fantastic to

lose our freedom, with such subtle manners to handle in what we believe to be a free world?

**Artificial life:** It sounds curious because anybody thinks immediately on the artificial intelligence of robots which is supposed to exist one day and which has been evoked in many books and films like in the space invaders. In fact artificial life exists already and that thanks to the reproduction of clones, the first surviving clone having been Dolly, a mutton born from an adult nucleus, in 1996 and which died 2003. But since that time a zebra and 13 muttons have been cloned who survive the normal age of their species. An imaginary scientist thinks that to-morrow, if a country needs to increase its population, by example after destruction by an earth quake, an infection or even through a war, a battery of incubators have to be built functioning each like an uterus and provided with all necessary to live and to grow nutrients and which can be programmed (Figure 19). That it may happen to animals seems possible but not to humans because it has too much implications in ethic, psychological and economic problems.

Another way not really to create but to discover new life has been afforded by Wainright from Sheffield who has sent in the stratosphere a balloon (Figure 20 up) on which was appended plates highly sterilized. And when the balloon returned to the bottom, it was discovered that uniquely one plate presented at its surface a strange living matter, not knowing if it's a vegetal or an animal being but which he called a « biomorph » (Figure 20 below). I am still waiting to know if it was a really living matter or an artifact happened by an insufficiency of the sterilization. The problem is that never such a structure has been observed during the numerous launchings of balloons on any surface of them and why it was necessary to have needed a sterilized plate to discover it ?

## Conclusion

As it may be seen the Biotechnology presents many faces each one covering a specific field even it exists parts of it overlapping other placed on crossroads from which we have to decide which is the most important to consider and to which we give priority. But you may observe as well from its most early time, that it has evolved from the cell but that the cell would never have been studied without the techniques permitting to study it extensively and that progressively through the development of the techniques, the cells have become better explored, better understood, whereas it has become indispensable to learn all these new techniques, so that it has requested from the individuals, often against their wish, but being their indispensable need, a permanent information to understand their interactions and definitively their extension to unattended domains. So why to range the smartphone in WBT, white biotechnology, whereas it is a purely technical electrical instrument ? The reason is that it is a helper in the life of the humans as well for telephoning, to serve as a calendar, to memorize events, as a photographic apparatus and many other multiple purposes to serve. The same is valuable for the transport means of all sorts but to which are joint new means to improve their use like electric cycles, new types of autonomous planes called drones, useful for many new application in peace and in war, autonomous electric cars without driver, higher resolution microscopes for viewing the inner structures of cells, like the mitochondria, higher speed vehicles like the train Hyperloop, at a speed of 1000 km/hour, (Figure 21 up) what contrasts terribly with the 15 km/hour speed of the first train in 1831 (Figure 21 below), the discovery of the gravitational waves (Figure 22) which to-morrow will permit us to go in a few hours on the planet Mars, whereas the antimatter remains still to be discovered, but whose interest is already present in the spirit of the scientists and will permit us, after tomorrow, to visit during a trip lasting only a short period, exoplanets, which are at several

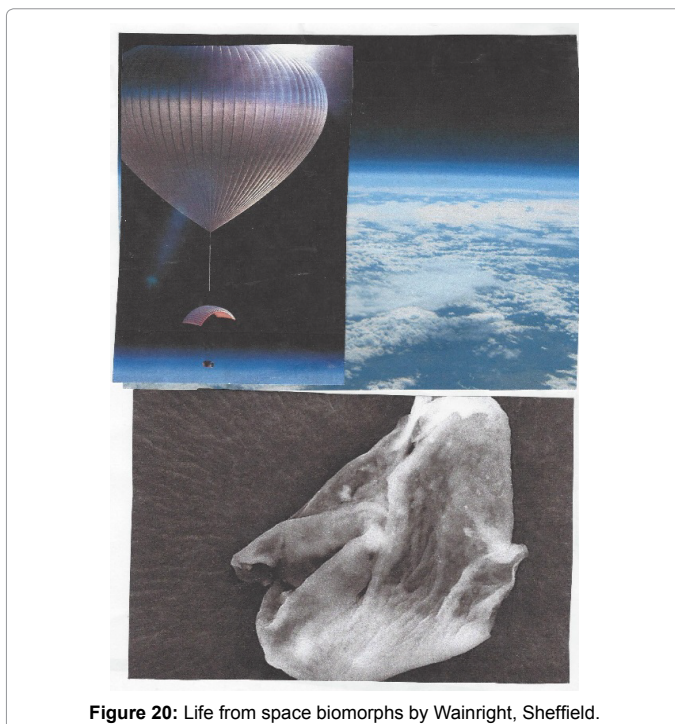


Figure 20: Life from space biomorphs by Wainright, Sheffield.

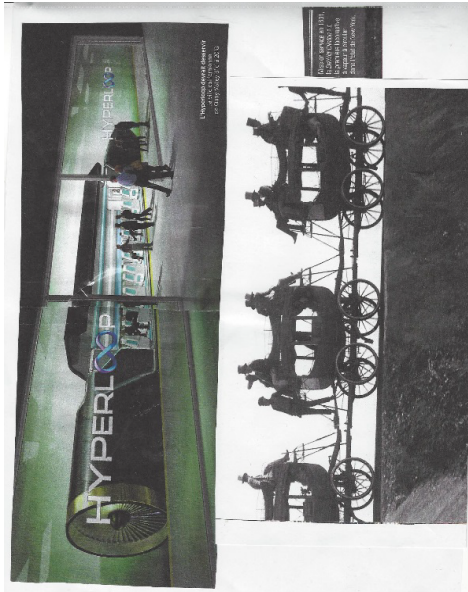


Figure 21: High speed train hyperloop and the first train.

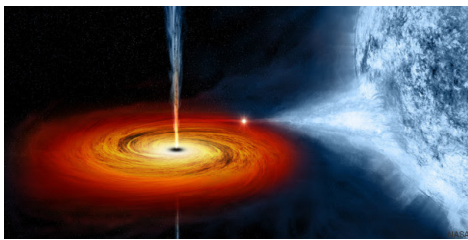


Figure 22: Gravitational waves.

years/light far from us, with imaginary space-time contracted vehicles already designed by the NASA to discover perhaps other civilisations, now, whereas all seems possible, with the existence of an increased reality as well as of a virtual world. The question of producing human clones is fascinating, functioning with artificial brains transformed in biocomputers largely over the capacity of the supercalculator Watson, which are able to develop their own programs, the phase of the humanoid robots looking to be under way, by finishing to be completely « humanized » but remembering that the actual calculating machines of the student are much more performing in speed and in extension of calculations than the computers at the time of the conquest of the moon and that they are in a permanent increase of their performances in an unlimited manner. We are consequently living at a period of a permanent evolution and better said of a technical explosive revolution without limit. The question is that all looks like it is with the roman God Janus who had two faces, one smiling, to see inside the house and one looking outside the house, winced to all people entering the house warning them that they are perhaps not all wellcome. That is what happens with the biotechnologies from far not wellcome from all people, better said from old becoming people, because they have more difficulties and have from far not the easiness of young people to understand the new systems, who redoubt that they may make more harm than giving satisfaction. But it is unavoidable that the life is implicated in a permanent destruction combined with a permanent reconstruction, where progressively all changes. The story is the same as in the romance of the French writer Edmond about from a man who felt in sleep fifty years ago, and who comes back to life in his outdated clothes and for whom all is strange, the frontiers changed, narrowed, and in which he is unable to adapt himself to the new type of life. It's not different to many people of our times and explains all the socio-economic problems perturbing the life and even the inadaptations of most of the politicians, from any wing, to understand this new world, unable to find the way to master its tsunami of new knowledges breaking over the ancient ones to let them engulfing, and to regulate them, in order that the humanity lives in a peaceful atmosphere of the world, what seems to never be reached.