

PSYCHE AND SOCIETY

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Editorial

Pavlov Institute is an organisation comprising of psychiatrists, psychologists, social scientists and scientific workers and it is working for the last sixty years with the three interdisciplinary subjects namely biology, sociology and psychology. In the coming year our Bengali vernacular *Manabmon* will celebrate its diamond jubilee. Hope you should join with us in this modest celebration around February, 2011. It is a great achievement for any scientific journal in a regional language publishing uninterruptedly for the last fifty years. Its English version *Psyche and Society* started publishing from May, 2003 with a definite motto. What is our motto?

The world of psychology is in a fine ferment today. New theories, even 'schools', based mainly on empirical observations are coming up with disturbing regularity. The history of science shows that such proliferation of too many ad-hoc theories presages a breakthrough. We of the Pavlov Institute firmly believe that this breakthrough will eventually be achieved along Pavlovian neuro-psychological lines. However, this belief does not make us impervious to other scientific modes of thought. 'Let a hundred schools of thought contend' is our motto.

With this end in view we have launched a biannual journal *Payche and Society*. There are quite a few academic journals of psychology and each is having its own merit. And yet, how many times you must have felt the need for an open platform where you can unhesitatingly speak your mind, without having to conform to a set pattern, without having the unsavoury thought that you are being 'the odd man out'. *Psyche and Society* is just such a platform - a vehicle of your independent questions, your original ideas, your unconventional views.

Without in any way severing its links with the academic world, *Psyche and Society* seeks to build a meaningful bridge with the society at large. For, as you are aware, of all the branches of medicine, psychology is the one most intimately concerned with society. Consequently, social science will have an important place in this journal. In short, the journal seeks to promote a comprehensive, truly scientific and objective probing of this marvel of nature - the human mind, la pense'e.

Your help, dear colleague, is of the utmost importance in this venture. Help in the shape of articles is earnestly sought. Do send in your valuable observations and suggestions. They will be treated with due respect.

The modest launching of *Psyche and Society* is not an earth-shaking event: but it is sure to create tremors in the world of Indian psychology. Share this excitement and carve out for yourself a niche in history. **P A S**

The Psychology of Student-unrest

Dr. Dhirendranath Gangopadhyay

Today's student's mind can be said as some meteorological apparatus to determine the weather of the society. If there is any depression or vacuum that would be reflected in the mind of student. They cannot keep their mental balance always in a stable condition. Students are vulnerable to create all kind of disturbance in trivial causes. Today's student's mind is not only concerned about how to acquire the course, syllabus or curriculum but also they are interested to know everything occurring surrounding them. Everybody admits the diversified inquiring nature of the student's mind. Recently they have become very much alert about the social matters. His restlessness nature has been increased and he has become an important subject of discussion, especially at the decade of sixty's.

To know the psychology of the student community we have to note some especial feature. The teenaged student is generally restless in nature and also suffers from hormonal imbalance due to pubertal change of his mind and body. After reaching youth age the university student arrives at the gateway of new world. He is very much eager to be accepted in this new world. By gradual germination of a complex mindset and a sense of opposition, his restless nature of previous teenage psyche is slightly diminished. He is aware of his strength. He is ready to offer himself for any kind of experiment specially in any form of conflict. Again he has a dilemma to determine the form of struggle chiefly due to his inexperience. Apprehending all this perplexing situations he is a bit disturbed. He is not ready to continue a long protracted struggle. Identification, self-realisation, self-searching for his actual place in the society - all this are the factors that kept his mind busy, thoughtful and distressed.

Student-youth wants to join in the large family of the society after severing himself from the tie of family dependency. He wants to join in 'peer culture', with his immediate friend circle after being alienated from his family culture. He gets the opportunity to verify the rules, regulations and values of contemporary society. He feels the necessity to do so. All this contradictions, points and counterpoints are always live and vibrant in his mind. The roadway from child to adolescent period and from adolescent to youth is not smooth or expressway. In the context of space and time the transitional crisis takes various routes. When the society is stable this crisis felt as mild and superficial. All societies preach to preserve some values regarding consideration of high and low status, social differentiation etc.. And the tension, contradiction remain in the mind of student chiefly in dormant condition and in an inhibited state.

Naturally servitude, loyalty pervaded into the mind of student and the place and duty of student-youth is prefixed and that is easily accepted by the student-community. Again when the society is turbulent, sea change is imminent when various community is overwhelmed due to class conflicts with their interests, then the crisis of student's mind is acutely and deeply felt. This time social differentiation of high and low, old values and social regulations, loyalty, following etc. all these general virtues cannot be taken for granted without any suspicion. The

youth's mind becomes stressful due to social tension. Prefixed values and ideas of the society cannot satisfy them. They feel insecure. The student community tumbles in the form of protest. The depression or vacuum of weather perhaps felt for the first time in the mind of student. Transitional crisis in this stage do not remain exceptionally remote. All of them suffer from restlessness. Imposing a special virtue of this movement-unrest create a particular image in their mind.

Today we are very much concerned and anxious observing the negative attitude and recklessness of the school and university students. Student-unrest is today's universal feature of developed and developing countries and it is now accepted as a special problem. State leaders, social scientist, psychologist all are highlighting the problem in their own worldview and they are trying to find out its solution. Universally accepted solution is not available and it is not at all possible. Because I have said earlier, student-unrest has cropped up in various countries for various reasons. So it is not possible to find out a single formula that would be accepted by all. Again one can find in the same country various contradictory opposing ideologies with its class interest laden interpretations. So the solution thread is also contradictory and complex.

The rulers of the state naturally try to maintain a status quo. If the student-unrest do not directed by the state leaders or it would not keep their class-interest then this movement is declared as anarchism and as if it is an act of some enemy to the state. Many social scientists of developed countries think that this is a protest movement against the merciless exploitation of the technocrat and monopolist. In the developing countries it is thought that this movement is directly related to the failure of development planning and slow process of development and influence by politics. As the states, recently got freedom through freedom struggle that is actively participated by the students, teachers and youths, cannot shun its traditional habit of protest in coming one or two decades.

Nevertheless it should be kept in mind that our education system has developed imitating the college, universities of the West. This Western Institutions are fairly autonomous for a long period and in many fields it is not directly controlled by the state. Police were forbid to enter these institutions. Even in Russia when in the period of Tsar, police were not permitted to enter into the educational institutions, the banned revolutionary groups took the opportunity to arrange their meetings regularly in this campus. Recently the revolutionary of Venizuela has taken this advantage of organising meeting at the university campus. Bourgeois liberalism has emerged at the first part of the capitalism when it is thought that country's development and production depends on the discoveries of the research department of universities. Moreover it was thought that this environment of research would be free and fair from any state interference for any creative and independent work.

This idea of liberalism of the Prussian education-reformist has been implemented by the Japanese at the Nineteenth Century. In the primary stage the traditional values of education is only rote memory. In the university level education should be creative. This was the ideal in that period. For this reason the higher education institutions and universities were transformed into shelter of radical and new ideologies. Developing countries have mostly accepted this Western ideology. So the university campus has become the free breeding place of revolutionary ideology and banned free thinkers. This conception is totally faulty that various types of politics are the bad insects or virulent germs that are newly introduced in our

educational institutions. Student-unrest cannot be compared with the natural disaster or a malignant growth.

The students had burn the effigy of Lord Curzon in 1905. In 1921 the students had responded to the call of Mahatma Gandhi. In 1942 they were equally responsible for the destructive works like their adults. Today's student-unrest is characterised by its length and breadth that is conditioned by this age. In this age the student's mindset has been changed profoundly so the intensity and depth of today's student unrest has changed profoundly.

In our country the education system of pundit-centred 'toll' has been abolished for many years back. But in this feudal hierarchical set up the duties and responsibilities of the student is prefixed and that should be obeyed. Apart from few exceptions in almost all the cases parents, teachers and elders of the society were as usually respected persons to them. The student-unrest of pre-independence period mainly directed against the foreign rulers and their supporters. And this elderly respected people had supported the agitation of this student-youth either directly and indirectly. In this protest-agitation, protest against teachers is temporary, sporadic and mostly individual-centred activities.

Mainly this agitation was directed towards some protest against the incidence of ridicule and shameful condition of the country or its leaders. Here protest against guru and disloyalty is the chief characteristics of this student agitation. In most of the student's mind of today we can find intense hatred, vigorous rage reaction or lifeless detachment, carelessness, irresponsibility and suspiciousness. Disrespect towards old tradition and existing value premises perhaps is the characteristics of today's youth. They are unwilling to keep the teacher-guardian as their traditional respected elders.

After independence there is an effort to change the production system of the society. Proportionately the percentage of urban population has been increased. Education, especially the higher education and technical education have increased many folds. A considerable number of student-youths are migrating from rural to urban areas. In capitalistic production system related education system, the total period to complete higher education have increased, delayed and the number of population taking higher education also have increased considerably. In feudal system the students who were previously engaged in married life, are mostly now continuing their studies. In one side they are now eager to depend on their guardian-teacher and in the other side they consider themselves as adult and responsible citizen and want to take independent role in social changes.

This transitional phase of psychological weaning has increased many folds and the number of student-youths involved in this weaning have also increased. We can say that the pubertal age has increased. Many of them have entangled in this critical period. This age is more or less ideal for idealism. The youths are to some extent sensitive, romantic and idealistic. In various means they are getting the news of student-unrest of other countries. The news is not only news but also it is coloured with special types of views. The students are restless and tense for communicating with this various news, views at a rapid and unimaginable speed. I have written earlier the youths are planning to advance in jet-plane speed and the party-institution-state is showing them to advance in the speed of a mollusc.

So an attitude of intolerance is manifested in the behaviour of the youth. In this condition he is thinking that the elders are not marching in the right track. He is annoyed. So he is not able to keep confidence on the elders. He is questioning why his country would not develop

themselves with the same speed of development of science and technology. In the last analysis of all agitation this message inevitably emerged. Emotion rather than reason is dominating in their speeches. In youth's mind preponderance of emotion and its influence in all activities is natural.

This is other reason that they are losing their confidence on guardian and teacher. Except politics other causes that are creating student agitation are chiefly determination of syllabus, management of education system and institutions, examinations etc.. In all this matter guardian-teacher is not of much help to them. In this social unrest they are also suffering from restlessness and mental tension. Many of them are suffering from pecuniary difficulties and associated problems. The course, syllabus of their children and the subjects of study of higher secondary examination are very hard for their comprehension. In the previous generation entrance passed father was very much helpful to his son who was preparing for matriculation examination. This is not at all possible today.

As a result today's student-youths do not consider their father as much erudite person. So he is not that much respected by their son. At the same time the authority of the guardian and teacher regarding management of education system is much reduced. Various experiments are going on regarding determining the course, syllabus keeping an eye on the overall production system of the country. State planning is increasing and decreasing depending on the flow of foreign funds just like ebb and tide. Again and again we are hearing of some change and some change is also occurring. As a result in one hand there is unrest, restlessness and ultimately they become disinterested in education. On the other hand there is increasing non-confidence regarding the role of guardian and elders.

We should keep in mind that there is tremendous increase of student population but to meet that demand we are not able to increase the number of institutions, teachers and other appliances in that proportion. So we are facing various types of indiscipline and chaos. The student community is increasingly developing negative attitude towards teachers, education system as well as politician, statesman, guardian and elders. They are much more attracted regarding the message of Bendit brothers rather than the traditional ideology of Aruni-Upamanyu. The story of Cassabianca does not make any impression in their mind. There is deep seated rift between the student and teacher-elder and disloyalty among student is increasing. A considerable number of leftist student-youths are defying the command of indigenous leaders accepting ultra left foreign heroes as their leader. The rightist are advancing towards more right direction than their teacher-leader. And the centrist are expecting that not only examination, course-syllabus, political or economic laws etc.. But also in all sphere of life they want to be controlled by their sweet will and wishes. Student-youth are not prepared to accept the domination of elders without any challenge or verification.

The changes already occurred and still occurring in the minds of the youth during Second World War is almost global. This is the special characteristics of youths of modern age. According to Herbert Mercuse, students are morally alienated. Regarding the question of ethics they are alienated from society, institutions and its controlling managements. They want to reject almost everything including the education system. One French social scientist says that knowledge and knowledge of technology is precious like the capital of yesterday. So we can compare of yesterday's labour unrest with today's student unrest. Student-teacher relationship is like owner-labour relationship. Like Mercuse this social scientist also thinks that there

is no difference between capitalism and socialism and they are giving very much importance on mechanisation. Actually they are propagating some anti-socialist statement in their theories.

We have to keep in mind that the students do not take part like workers in the production process. The students who are eventually by the side of the production unit are less agitated. The mindset of the student is like seasonal flowers. In their mind as if different season with its different characteristics reflected on so they respond to it accordingly. Another social scientist thinks that students are privileged bourgeois class. Main objective of their agitation is to misguide the socialist revolution. But this hypothesis has not been proved. It has been seen that sometimes students have supported the demands of the working class and they have stood by them. Sometimes student's interest and working class interest have been unified. Students are not either bourgeois or labour class.

Time has tremendously intensified the student agitation. Student's attitude has been changed. We cannot deny this truth. Demand of higher educated and intelligent workers have increased many folds even in developing countries like us. Today's technician is connected with production process, involved in marketing and the intellectuals are capable to influence the students especially for not maintaining social status quo. So students are much more valuable to the state, to the society as because they are now indispensable part of the production system. Higher education is not only essential for growth and development of production process and commodity but also it is essential for maintaining production relation and to change this relation to a higher form.

The role of student is gradually increasing for acceleration or deceleration of revolutionary activities. Number of student is increasing as well as their consciousness. They are gradually become alert regarding the social conflict, tension and their roles. Among them those who are radicals, they are thinking that their universities are controlled by the old traditional means of production and relation of production. The authority denies that students should increase their knowledge, their erudition but not their power of thinking. And the students desire that they should foil the conspiracy to create them as some 'robot'. So they want to control the educational institution and when they find it is impossible then they want to destroy it.

We should be conscious regarding entry of various oppositional conflicting ideas to read the contemporary student agitation and its psychology. So long feudal rules were influential the student community can avoid the social injustice with the help of obedience, loyalty as considering it is not the noble virtue to act against it. Along with the entry of philosophy of science in these universities, sense of freedom and democracy are also entering to their mind. But democratic mindset such as tolerance to others opinion, self-consciousness and self-confidence, all are not yet properly developed in their mind. At the same time they are influenced by bourgeois 'sense of individualism' and on the other hand the feudal 'sense of dependence' has pervaded to this mind especially those who have recently shifted to university from village or suburban area.

This is the main reason for this various forms of confusion so that their agitation is misguided. The act to destroy everything that is old, to deny everything that is traditional is a kind of instinct that is to my mind an unsuccessful, pitiful, laughable act of inferiority and forceful denial of this feudal sense of dependence. On the other hand the student's mind has been sensitised with the ideas of socialism and communism. It is natural that the young mind

would be much more attracted to utopian communism. The virtue of the youth is to get immediate and total change. They have understood that social equality is a must. They are not prepared to give time to comprehend the means and methodology of the development of this social consciousness.

When it is the easy way to pass the examination with the help of 'short cut' 'guide book' instead of text book then why somebody would accept the pain to study difficult Marxist classics for indoctrination of communism. They should demand some easy short cut regarding party-literature and some opportunist party leaders may easily take the opportunity of student's weakness and intolerance. If we can get a cup of hot coffee by just inserting a coin then why should we take the labour of preparing it with milk, sugar, coffee etc. etc.? If we can quickly establish communist society by means of recognising the enemies of communism and swiftly eliminating them from the society then why we should take the trouble of unnecessary practice and the difficult road to know the complexity of society and try to change it in a gradual process step by step in a painful pathway.

It is a well known fact that democracy has been stuck into the bureaucratic corruption with some Gordian knot of red-tapism. In this reference all kinds of anti-establishment and socialistic attitude can be encouraged. Suggested-prone student-youth can be easily influenced by showing some example of 'scapegoat'. As a result it would inevitably create student agitation, ultra left ideas and destructive activities. We cannot make responsible them for all this maladies. In this regard we cannot deny the responsibility of the aged or elders.

Today's student-youths are conscious of their strength. He knows he has some advantages. He has not to take any specific social responsibilities so he does not think of any compromise. They know that state power would apply unlawful force on them by police atrocities as a last resort. For this reason some of the student leaders display ostentatious attitude. Like political leaders a section of them is also becoming opportunistic and power hungry.

Some people engaged themselves in politics in the intention of dominating attitude towards others. It is the mindset of almost all student-youths to dominate others, to influence other's thought, mould other's emotional feeling. Recently with the passage of time their intentions have increased enormously. Their self-aggrandisement attitude has increased. It is not unnatural to become violent when this self-aggrandisement attitude is being opposed. A group of students whose nervous system is more excitable and less inhibitory they are much more aggressive and mischievous for this reason.

Student-agitation psychology of West Bengal and Calcutta is intimately related to the social history of last thirty years. Indirectly Calcutta and West Bengal is carrying the trauma of Second World War. To supply the huge war materials and engage soldiers as ally force, at the Far East, our society had to face some dire consequences. Black money had increased and there was tremendous social erosion. The lower middle class were also contaminated with reckless behaviour and bohemian attitude. Sometimes back the feudal social ruling were effaced, the large family rules were deteriorated. Then we had to face the famine of fifty's, communal riots of forty six. There was partition of our country and then came freedom following by influx of a huge number of refugees.

Suffering from stress due to insecurity the common people became restless and anxious. One part of the student-youth was encouraged to overcome the traditional way of thinking and

want to become a citizen of modern industrial society. They want that their demand would be fulfilled. And they want to get rid of their insecure future by joining to a political party to start an agitation. In this party organisation they get the warmth of the joint family. The party that is much more vocal about future promise for a new society is most popular. Becoming fearful about leftist movement and agitation the state-rulers were much more concern about self-defence and to save the party than to perform any development work. There was rampant corruption in all parts of the state and administration.

But in spite of this chaos the common people were not that much affected by the recidivism in comparison to other section of the society. Student-youth tried to manifest themselves through protest and agitation. They want to establish themselves and tried to locate his place in the society. A state of confusion and chaos prevailed throughout the state. The ruling party till date administered the state in self-defence and managed somehow with whatever comes in front of hand, only keeping an eye on election results. They gave hardly any time on development works. And the opposition parties took this advantage and attacked them with protest movement. In the mental horizon of student-youth there is the picture of world of justice and equality. They visualise a new sun rise. They are bursting like crackers. There are only two camps in this world.

In one camp there is justice and equality and in the other camp there is injustice and inequality. They are unified with a single hope, one song and one thought. If they crack down the camp of opposition they can build their dream world. Perhaps it would be created spontaneously. So at any cost it should be cracked down. And the managers of the opposition camp have the only thought that they have to survive by any means. In the first half of sixty's the international situation changed drastically and it transformed into cold war. There is division in the communist camp. This state of tension has been reflected into the minds of the student-youth of this country. And the unending series of division, alienation among the leftists heavily affected the student-youth.

We should keep in mind the student-youth of sixty's have born in the suburban areas where the social condition was enmeshed with famine, poverty, bloody violence etc.. They have seen protest and agitation since their childhood. They have heard the corruption and nepotism of the rulers since their birth. They have heard that all are enemies in the opposite camp. Now they have heard that there is enemy in their own camp and they are much more dangerous so far ideological revisionism is concern. In this way the enemies want to oppose the revolution. Or they have heard the name of ultra left anarchism. Many friends are affected by this infantile disorder. Their confusion has climbed to a peak. The organisation started to breakdown to small groups. The old party divided to form a new party. Again they have started dividing amongst themselves. Primarily the 'social and family culture' transformed into party culture, now the party culture has transformed into 'peer-culture'. The unorganised, immature youth only attracted and interested towards break down everything. Many of them respond to this call, student agitation became intensified, colossal and destructive.

Kenneth Kenniston has seen extension of social alienation (*The Uncommitted*, 1965) among the students of Harvard. Ferdinand Joyag (*The Student In The Age of anxiety*, 1963) has seen precociousness among the students of Oxford and Manchester. In our student unrest apparently we are visualising destructiveness and disloyalty. Is there not any positive indication in this incidence?

The fantastic development of science and technology for the last thirty years has truncated us from almost all of our popular traditional thoughts. Our orientation regarding space-time has changed radically and electronic-computer has revolutionised our thoughts. Revolutionary discoveries of molecular biology of newer knowledge regarding DNA and RNA, made the possibility of creation of new life in the laboratory. This has made bright regarding the possibility of changed embryology in the light of genetics. It is the opinion of many experts that drive into the space and in the depth of sea would solve the food crisis evolved due to population explosion. We the elders are only polluting the fertile, virgin environment at the name of production and profit. We are not trying earnestly to overcome our narrow personal interest for the sake of collective interest.

Is the student-youth agitation propagating the message as a symbol that we are unable to solve the new problems of this world? It is difficult to get some simple answer from this multiplex question. Is it a fact that the student-youth has taken the wheel of this society and asking us to go for renunciation and they want to control their fate among themselves? Even we cannot imagine the picture of the future.

Written in July 1970 **P A S**

Experiences of treating Out-patients in a Central Jail

Basudev Mukherjee

This kind of documentation has some importance in the domain of Community Medicine especially in Community Psychiatry as our prison population is actually a heterogenous, amorphous, marginal, poor community. Here jail, prison, correctional home have been used interchangeably, synonymously. Now a days our prisons are going to be transformed into or reshaped as correctional homes. Present author is engaged of treating this prison population at Alipore Central Jail hospital for the last twenty four years. At least 340 days in a year he is providing this services to the patients in the out-patient. Here total numbers of inmates have increased at least three folds during this long twenty four years.

However there are almost twenty thousand inmates in various correctional homes in this state of which the 70% are under trials and rest are convicted. In comparison to outside general population this inmates suffer much more due to various chronic ailments such as diabetes, hypertension, raised level of blood uric acid, gastrointestinal diseases etc. They also suffer from various psychiatric diseases. At least two thousands population of the total population suffer from various psychiatric illnesses of which a considerable number is drug addicts and chronic alcoholics. It is very difficult to predict why we get such a large number of prison population suffering from such various chronic ailments. This is multifactorial. We can site at least two causes. Number one they can not avail the facilities of medical-services of the mainstream due to various unfavourable circumstances and they are very much backward regarding health consciousness.

Recently we are facing a considerable number of literature regarding a link between

criminal activities and mental illness. The experts in this area have the opinion that some people do not have the biological insight regarding their present mental state specially regarding illegal activities. So this population repeatedly suffer from incarceration and not at all aware regarding their this kind of behaviour. The experts are calling it as a type of anosognosia, i.e. biological loss of memory or denial of the self. The subject demands a separate study and we have already started it. However as an usual course of observation any body can find that in any central correctional home a considerable number of inmates are suffering from chronic mental illness.

Inmates who are suspected to be an offender and kept in jail by judge's order are called undertrials or *Hajati* and persons who are already convicted by the trial court is called *Meadi*. All the inmates here are adult population and there is no female or children. On an average thirty to forty prisoners are admitted and discharged daily from this jail so the daily count of around two thousand inmates remain same.

Four National Public Health Programmes are running in this jail such as Leprosy, Malaria, Tuberculosis and AIDS. If in any fever case malaria is suspected, blood slide is taken. It is examined here by clinical pathologist and another is send to Chetla Urban Malaria Centre. If the blood slide is positive for malaria parasite then the patient is treated radically after admitting him in a hospital ward. In Tuberculosis, sputum is being collected from the suspected cases and send to outside DOTS centre for examination. If positive report comes from the DOTS centre then treatment protocol of Tuberculosis has been started after admitting the patient. This treatment protocol is supervised by the National Revised Tuberculosis Control Programme. There is an Integrated Counselling and Testing Centre inside hospital premises supported by the State AIDS Control Unit and regular counselling and testing of high risk prisoners are done here. If any body became HIV positive then he gets admission and subsequently he is send to the virology department of School of Tropical Medicine, Kolkata and treatment started under their guidance. Here CD4 count is very important and it is done regularly.

Medical Specialists of various fields attend this hospital twice in a week for few hours. Selected patients are send to them and their services and treatment follow up are being regularly supervised.

Alomost all the jail inmates are poor marginal people in every sense. In Alipore Central Jail a large number neraly fifty percent are long term convicts and on an average two thousand inmates are locked up in any day. There is no classification of prisoners but they are of various origin like dreaded Maoist, International terrorist to inmates like drug-addicts, chronic alcoholics and inmates with petty theft cases. Once this Central Jail is designed as the place of residence of South 24 Parganas inmates as Dum Dum Central Jail is designed for North 24 Parganas and Presidency Central Jail is designed for Kolkata.

We got the opportunity to maintain the out-patient of Alipore Central Jail hospital with the help of at least twenty inmates for the last twenty four years and at least 340 days in a year. Everyday we started this work at about nine a.m. and finished at about twelve noon.

Considering public health services this kind of out-patient activities is very much significant. Even it is a significant activity regarding community psychiatry. There are people in jail who are not seriously ill but their illness behaviour mimic a serious illness. And there are people though few in number who are seriously ill but do not get proper care. They suffer and

die at outside state hospital due to medical negligence or due to sudden heart attack at jail. This is primarily due to lack of infrastructure and prison is not a proper place to accomodate this huge ucertainty and multiple contingent factors.

This section of the underworld population, that are mostly neglected in public health point of view thrown in jails. They are socio-culturally backward, volatile, underprevilged, illiterate, easily suggestible and vulnerable and suffers from various physical and social ailments. They cannot take the oportunities to get the services available in the mainstream of the society.

This is a gross classification of 100 patients in the out-patient.

Skin - 10% - fungal, allergy, pruritus, scabies, - impetigo
 Substance-abuser/ psychiatry patients - 20% - heroin, hypnotic, sedative, alcohol, hashis
 Joints - 5% - painful joints, rheumatism, rheumatoid (not rheumatic)
 Acidity/GI tract - 15% - Acidity, indigestion, diarrhoea, dysentery, nausea, anorexia
 Dental - 5% - caries, pyorrhoea, bad oral hygine
 Diabetes - 5% - majority obessity related mature onset and Type II
 Hypertension - 5% - majority essential
 Fever - 10% - majority acute viral, besides malaria, UTI, Acute lower and upper respiratory tract infection, Urinary trct infection
 Musculoskeletal pain - 5% - due to thrashing by people or police
 Psychosomatic - 10% - insomnia, bodyache, pain abdomen, constipation, tension, allergy.
 Miscelleneous - 10% - pulmonary tuberculosis, cardiac problems, malnutrition, psychiatric diseases, bronchial asthma, haemorrhoids, fistula, benign prostetic hypertrophy, AIDS.

Discussion

We have seen that if we perform some simple clinical laboratory examinations the quality of treatment is enhanced many folds. These factors are the following:

1. Blood slide examinations for any fever case.
2. Sputum examinations if any suspicion arises for any pulmonary tuberculosis.
3. Caution for increased body weight according to body-mass index.
4. Macroscopic and microscopic examinations of urine.
5. Regular blood pressure examination.
6. Per rectal examination.
7. Chest X-ray.
8. Physiotherapy assistance.
9. ESR examination.
10. Haemoglobin examination.
11. ECG examination.
12. Blood Sugar examination by Glucometer.

Now we can briefly discuss some relevant points.

1. More or less a fixed number of inmates suffer from various skin allergies and impetigenous lesion that is due to their unhygienic living conditions, scarcity of water and lack of adequate garments. Inspite of that there is prevalence of intestinal helmenthiasis, house-

mite, pollen grain allergies and some of the inmates are very much susceptible to that. So much so they have to take steroid drugs in small doses to combat the situation. But it is an astonishing fact that a certain amount of patients regularly suffer from this ailment. The other familiar skin diseases are also seen here such as scabies, taeniasis, pyoderma, other fungal infestations etc..

2. There are 200-250 drug addicts in this jail in any patient-day. This condition aggravated due to implementation of N.D.P.S. Act of 1982. So it is a reality that the substance-abusers are considerable in number in this out-patient population. In fact they are responsible for various kind of miscreant activities in jail premises. That may be trivial or that may trigger some dangerous situation. We should include the chronic alcoholics in this gang. So on admission to jail as a routine check-up we have to ascertain whether the person is alcoholic or not. Regarding custodial deaths they are potential hazards for any institution. Because their whole body metabolism is tuned with alcohol. Now its absence for a moderate period of time would create a violent withdrawal reaction which we call delirium tremens. This condition is potentially dangerous and need emergency intervention. However the substance-abusers are always in drug-seeking behaviour and we have to give them some amount of psychotropic drugs which is apparently non-addictive and has no cash value. Considering all their conditions we prefer clonazepam, amitriptyline, imipramine etc. regular consumptions. Any body can imagine that it is a formidable task to manage this huge number of drug addict population. It is not possible to maintain any rehabilitation programme for them as they stay in jail according to court directives and it is not possible for us to make a follow up community based programme after their release. Naturally they use this custody period as a respite.

In this connection we can say a few words about the psychiatry population in custody. We have said that at least ten percent of inmates are suffering from any type of mental illness including the substance-abuse. There is also incidence of comorbidity of psychiatric illness along with drug-seeking behaviour among this population. So if we want to make a gross classification among this psychiatric population it would be like this:

- a. Some are suffering from major psychiatric illness such as schizophrenia or manic depressive psychosis. They have perhaps entered jail while suffering from this illness. It is not usual to develop psychiatric illness due to stress for incarceration.
 - b. Confirmed substance-abusers including the chronic alcoholics.
 - c. Confirmed substance-abusers but they have definite psychiatric illness.
 - d. Suffering from minor psychiatric illness but they can run their daily life independently.
 - e. Suffering from personality disorders and it has a definite, deep, complex interrelationship with their criminal behaviour.
3. It is difficult to say about the inmates complaining for joint pains are actually suffering from either raised uric acid level, rheumatism or any kind of chronic arthritis. It is not possible to perform all laboratory examination routinely of this cases. But change of long continued life style of an adult due to incarceration along with some amount of stress may act upon their metabolic process. However they regularly use painkiller, allopurinol and some amount of antidepressant drugs to combat this chronic type of problems.
 4. Huge number of inmates suffer from gastro-intestinal problems. Apart from physical and mental stress the familiar causes of it are overcrowding, contaminated drinking water,

smoking and as a sequelae they are heavily infected by the virulent strain of *Halibacter pylorae* bacteria at the stomach. This people routinely takes various antacids and antiamebic drugs and they appeal for some medicine for good sleep at night. So drugs like omeprazole, rabeprazole, metronidazole, domperidone, tinidazole, ciprofloxacin are frequently taken by them. The astonishing fact is why a large number of them do not suffer from diarrhoeal diseases though they consume at least some amount of contaminated water. Perhaps they have developed some amount of immunity or resistance against this diseases. Again this should be considered that daily in the common kitchen the preparation of two square meals are done by the prisoners themselves for at least two thousand inmates. Again this cooked food is transported by some utensils to the files at distance and thus distributed. Naturally it is a fact that it is not possible to maintain proper hygiene of this process by this illiterate, backward inmates. Yet we do not find that number of diarrhoeal diseases. We do not know the answer.

5. The inmates do not know how to take oral hygiene so they suffer from gum ulcers, dental caries, pyorrhoea etc.. from an early age. Convicts and undertrials equally suffer from this kind of ailments. So we can predict that in outside general population we will find the same amount of dental problems. For this reason dental care from a specialist is a much necessary item in any central jail comprising a large number of inmates. As it is a fact that chewing tobacco aggravated their oral ulcers. So in all these problems we need a guidance from a specialist which is not always available and the patient develops the habit of taking some drugs to get some relief.
6. All the diabetes mellitus cases we come across here are mature onset and Type II or adult type *i.e* primarily it develops due to increase body weight. Though some juvenile cases occasionally seen here. We have to take special care for them. All the medicines required is available even the brand of insulin also. Specially when some 'dignified' inmate demands their brand we have to supply it. Sometimes we get some diabetic patient complicated with tuberculosis, AIDS, various neurological problems and also commonly cardiovascular problems. Once in a month we get the service of an Endocrinologist. Regularly we can check the blood sugar of the patients. So it is rare that patient suffer from some extreme problems due to diabetes.
7. Hypertension like anywhere else is a common problem to the inmates and equally for the convicts and undertrials. The patient gets a counselling whenever we come across a fresh case of hypertension so that he can himself control his increased blood pressure. In some cases patient is non-cooperative regarding regular taking of drugs and taking necessary measures to decrease bodyweight. Specially we have to suffer with patients having delirium tremens or with the chronic alcoholics. So occasionally we come across with some cerebrovascular accidents. Considering the huge amount of problems concerning chronic alcoholics it can be suggested that we can immediately start an academic course on chronic alcoholics and a course regarding its management. Because it is a special problem to the custody and outside also and day by day we have to face increasing numbers of such type of patients.
8. This is a malaria endemic zone and we have to take special care for examination of blood slides in any fever case. Particularly we have to consider regarding occurrence of *Falciparum malaria*. However in every fever case we take the blood slide and examine it in different

places to ascertain the cause of fever. If the patient is positive for malaria parasite then we admit the patient and give him suppressive and radical therapy according to the W.H.O protocol. However majority of the fever cases are mixed acute viral fever type. So they mostly develop acute respiratory tract infection that subsides by antibiotics. It is fact that we prefer to administer antibiotics irregularly and randomly in most of the fever cases that is not necessary and proper if it is an acute viral fever. It is useless, unnecessary and wastage but we are helpless. Because people even the illiterates are culturally so much accustomed to take antibiotics that if we do not prescribe the patient any antibiotics the patient would consider that he has not been treated properly.

9. Musculoskeletal pain is a special problem in custody and they frequently complain of arthralgia, bodyache etc.. That may be due to soft tissue injury or thrashing by police or public apart from the chronic pain syndrome of the substance-abusers, chronic alcoholics as they regularly demand for analgesics and as a whole there is a heavy demand of this kind of medicines.
10. In the miscellaneous group there is pulmonary tuberculosis, cancer, general surgical problems. Specially persons at above or at the age of fifty years frequently complains of difficulty in micturation and on examination we find there is prostatic hypertrophy. Apart from that there are HIV positive cases, constipation, vertigo, otolaryngeal problems, general weakness, insomnia, cardiovascular problems etc.. It is very difficult to address each and every problem with due attention and to give proper patient-care. In these cases we have to depend on outside state hospital, medical colleges and we have to follow their guidance of the specialists of various departments. In this regard we can easily understand the amount of coordination necessary to complete the treatment procedure.
11. Somatization or somatoform disorder and psychosomatic problems and are very common in custody situation and it is difficult to differentiate them. Psychosomatic problems are those that are aggravated due to any kind of stress or inflicted violence upon them. Such as increased blood pressure, diabetes, peptic ulcer syndrome etc.. are very common ailments that are very much susceptible to stress. It is difficult to establish the direct link of stress or violence to this disease formation. Somatization problems are mainly that kind of illness behaviour just to seek attention or to describe some peculiar physical symptoms that cannot be evidenced or corroborated by their existing physical conditions. As they narrate some peculiar symptoms in their local dialects such as syncopal attack, restlessness, black out, palpitation, general weakness etc. which is impossible to corroborate with any ailment. They describe this kind of symptoms one by one days after days and they are satisfied with a small amount of medicines. Actually they purge their pent up emotions or anxiety-tension through this symptoms and in this regard they emulate each other.
12. We have Clinical Psychologist with us for counselling of the patients whenever necessary. This service is specially useful for the depressive and suicidal inmates.

Now we can say a few words about illness behaviour of the inmates. This can be enumerated in this way -

1. Though small in number but there is some patients who express malingering.
2. A percentage of patient do not care for the severity of their illness and clearly neglect their disease and face dangerous consequences.

3. There are some inmates who are very much sensitive, demanding and concerned about their illness and frequently create irritation to the doctors or the paramedical staffs.
4. There are some inmates who are genuinely eager to know the severity of their problems and after proper counselling they become satisfied.
5. There are some inmates who want to make a 'case' of their ailments just to get release and pressurized the doctors for a 'good' medical report.

Conclusion

Here the majority prisoners are poor, illiterate and they are ignorant regarding their health condition. The quality of life of majority of them is also not good. While incarcerated from day one they suffer from anxiety and tension (any kind of stress) for their release and the helpless condition of their family members. This is nothing new. But it should be kept in mind that nearly 70% of prison population is undertrial. They suffer from some general problems such as acute viral fever, amoebiasis, skin allergy, peptic ulcer syndrome, essential hypertension etc.. And they also suffer from some special problems like cardiac, pulmonary, renal, gastrointestinal etc.. Alipore Central Jail has some special problems as a huge number of patients are referred from outside jails for better treatment. To accommodate this huge number of moribund outside inmates it has to suffer some strenuous extra workload. Naturally it would become increasingly impossible to provide optimum patient-care to this helpless population as there is no infrastructure.

One thing is remarkable regarding transmission of communicable diseases among prison inmates such as diarrhoea, malaria, tuberculosis, typhoid, hepatitis A, leprosy, HIV etc.. In my tenure of this long twenty five years I have not seen or heard of any single incidence of transmission any of these infectious diseases. Say for instance a huge number of prisoners (almost two thousand to three thousand in a Central Jail) are kept in a closed space and without mosquito-net. But the incidence of malarial fever is negligible. Though Alipore is a declared urban malaria epidemic zone for the last ten years.

In the common kitchen the food articles are prepared and served for this huge number of inmates. It is nearly impossible to maintain proper hygienic care as the total process is run by our poor, illiterate inmates who have no sense of hygiene and there is scarcity of water and other resources. But there is no incidence of outbreak of diarrhoeal diseases. The same thing can be said regarding all the communicable diseases. The reason for this hard immunity is unknown to us. Even the psychiatry patients of a Central Jail are quite big a number and it is not possible in this present infrastructure of jail to maintain proper care and hygiene. Yet rarely we come across such outbreak of any communicable diseases. **P A S**

The Buddha and the Six Heretics : How Debiprasad Chattopadhyaya Viewed Them

Ramkrishna Bhattacharya

Debiprasad Chattopadhyaya's *Lokāyata* (1959) is a much misunderstood work, although the subtitle of the book makes it clear that it is not meant to be a study in the Cārvāka/Lokāyata alone but ancient Indian materialism as a whole. Hence the book covers a wide range of issues involving archaeology, anthropology, Tantrism, Buddhism, Samkhya, and finally, the genesis of idealism. There is also an appendix significantly entitled "Material Basis of Idealism", extracted from an earlier and longer article by the author.¹ It is in connection with the section on the Buddha (Book III. Chapter 7, "Sangha and Niyati: Studies in Illusion and Reality", 404ff) that Chattopadhyaya discusses the Pali *Sāmañña-phala-sutta* (SPS), a major text in the *Dighanikāya*, and analyzes the teachings of the Buddha vis-à-vis those of the five heretics, more particularly Ajita Kesakambala, Makkhali Gosala, Sanjaya Belatthaputta, Pakudha Kaccayana and Purana Kassapa, leaving Nigantha Nathaputta out of discussion. The reason for the exclusion, Chattopadhyaya says, is "we do not have the scope here to discuss Jainism" (507). However, Gosala is discussed in detail, for "his failure in life and teachings formed the most dramatic contrast to the success of the Buddha" (507).

A few words about the Pali SPS first. It has long been regarded as the main source of our knowledge about the six chief heretics at the Buddha's time.² The same text has been found in several Chinese, Sanskrit and Tibetan versions. Although differing in some details, particularly as to which doctrine is to be attributed to which teacher, an overall view of the heretical doctrines current in the sixth/fifth century BCE is now available both in the original languages and in translations. In spite of Vogel's criticism of Basham's neglect of the Chinese and Tibetan sources, it is now more or less established that the Pali version with all its textual problems is the oldest of them all.³

To get back to our point : one of the many questions that Chattopadhyaya raised in *Lokāyata* is: Why did the teachings of the Buddha's contemporaries, especially the major five of the sixty-two heretics, recorded in the Pali SPS, fail to survive while the teachings of the Buddha succeeded? Chattopadhyaya's answer was: The Buddha had provided the right illusion to replace reality which his contemporaries could not (506-07).⁴

Bhowani (sankar) Sen (gupta), an ideologue of the undivided Communist Party of India (CPI), in his otherwise appreciative review of *Lokāyata*, objected to this formulation of Buddhism as a fitting illusion. He said :

This is a negative approach which fails to explain the social progress of the epoch under the flag of Buddhism. Mere "illusion" cannot act as an incentive to a popular upsurge through material and cultural development. In so far as there was lack of science, illusion it was. But it must have possessed a positive content. Perhaps their positive aspects consisted in the doctrine of Karuna and the principle of order which had given stability to benevolent despotism. (11. Emphasis in the original).

Chattopadhyaya's analysis of the SPS has been considered significant. It has been referred to by Graeme Macqueen. Chattopadhyaya, he notes, rightly pointed out:

The question [asked by Ajātasatru] was simple enough. The teachers must have understood it. Evidently there was no real answer from their points of view : none of them could think of any real advantage in the life of a recluse.

Quoting the above passage from *Lokāyata* (509), Macqueen comments:

This point is so basic one might also miss it. But it is very important. According to the doctrines of all the heretical teachers except Mahavira, who clearly does not fit in this group, there was no benefit to be gained by abandoning home and becoming a sramana, and no point to sramana's exertions. By contrast, in the Buddha's system there was positives value and reward to these things, as is amply shown in his discourse (270 n121).

Macqueen also asks his readers to see p. 486 of *Lokāyata* (where, after stating his view of the Buddha and the five heretics, Chattopadhyaya mentions Mahāvira and grants him some "success, though not as great as that of the Buddha" in evolving "a proper illusion of the epoch").

It is interesting to observe that Chattopadhyaya in later years revisited the problem again and again and modified his stand. This is evident from his long essay, "Some Problems of Early Buddhism" (1970) and his two book-length studies, *What is Living and What is Dead in Indian Philosophy* (1974) and *Science and Society in Ancient India* (1977). However, they are concerned with the Buddha's teachings only, not those of the heretics.

In his "popularizer", *The Beginnings* (1990)⁵ Chattopadhyaya seems to have revised his whole attitude. There are some new features in this slim book which appear in a more developed form in his *History of Science and Technology in Ancient India (HSTAI)*, Vol. 2 (1991). One cannot fail to notice a gradual and significant change in his attitude towards the six heretics and the Buddha from disapproval to growing admiration (Bhowani Sen's criticism may have played some part in this transition). Snide remarks about Ajita Kesakambala and others as philosophers of the graveyard⁶ are silently dropped. A new merit is found in their rejection of Brahminical ideas, for instead of submitting to such ideas, they promoted doubt. The Buddha is now called "the first social scientist" ((1991), 109); he is placed against the backdrop of the second urbanization, and what Chattopadhyaya had already said in his 1970 essay is reiterated. Since the essay may not be known to all, I extract below the relevant passage which forms the conclusion of the study:

Strangely enough, ... the Buddha had even a closer similarity with another great social reformer ... He was Robert Owen. For Robert Owen, too, was building his sanghas, the communist colonies, as the Buddha, in the heart of a class divided society. Further, like the Buddha, Owen thought the change of heart would bring in such a miracle (36).

How could such similarities occur in spite of all spatio-temporal difference? Chattopadhyaya provides a neat answer :

Such similarity may appear to be very strange; however, on a deeper understanding of the historical development we can see there is nothing mysterious about it. Both of them saw the tyranny of the class divided society and because the Buddha stood very near its beginning while Owen near its end, the vision of a classless society could inspire both (36).

In *The Beginnings* Theodore Stcherbatsky was brought to stress the significance of the Buddha's rejection of private property as also of the existence of the (permanent) soul (126). Stcherbatsky in an address (24 August 1919) said:

Where there is personality there is property belonging to it; where there is "I", there also is "my"; and where there is personal property, there necessarily emerges a love for it in one form or the other. This attachment to personal property is the root of all evil, the root of every personal action as well as of all social injustice. Thus, by negating the existence of the soul, Buddhism gives us a very profound philosophical basis for the negation of the right of personal property. What personal property can be possible where even the personality itself is not there? (26)

Stcherbatsky concluded the passage with the following observation:

In the history of world religions, of Christianity and of Islam, we frequently find doctrines which negate personal property and advise that this be renounced. But Buddhism gives the most radical treatment of this question. (26)

In *The Beginnings* Chattopadhyaya dealt at length with causality and dialectics, mostly following Rhys Davids and ended with the concept of nirvana, quoting at length from Oldenberg (132-36).

All this, let us note, not only modifies Chattopadhyaya's earlier position somewhat radically but supplements much that is new. Even in *The Beginnings* he was critical of the Buddha's plan of the Samgha. "The begging bowl", he regrets, "became the symbol of a Buddhist monk and private property took its revenge as it were on the Buddha for having been so critical of it" (126). In *HSTAI*, he revisits the whole issue and, what is significant, goes back to the six heretics, quoting again their views in full from the *SPS* (this time from a new translation). He now follows Dharmananda Kosambi (not only his illustrious son, D.D. Kosambi whom Chattopadhyaya quoted several times in 1959)⁷ and proposes to relate Sanjaya's doctrine of *viksepavāda/vikkhepavāda* (the doctrine of equivocation) to the *syadavada* doctrine of the Jains. Chattopadhyaya did not fail to note the fundamental difference between the two: while Sanjaya *negated* all alternative possibilities, the Jains *affirmed* the validity of all the ways of looking at things (86).

Thus the omission of Jain philosophy – a serious lacuna in *Lokayata* – was filled in *HSTAI*. Pluralism (*anekāntavāda*) received its due place of honour in what Chattopadhyaya described as the "intellectual turmoil" in India of the sixth/fifth century BCE. His study of the "new intellectual climate" is rounded up with the overview of the Upanisads on the one hand and Buddhist and Jain texts on the other. A fuller picture emerges from his analysis in his last work.

What made Chattopadhyaya change his view so radically about the Buddha and the six heretics? The answer is not to be sought subjectively. That Chattopadhyaya was an ever dynamic thinker and an indefatigable researcher is obvious from his works and needs no reiteration. What is to be noticed is the veritable shift in his approach. From the *philosophical-doctrinal* position he had adopted in *Lokayata* he gradually moved in his later works, culmination in *HSTAI*, to a more concrete *historical-critical* study of all philosophical systems. The ideological foundation of *Lokayata* was a very broad historical-materialist one. It was based on the division of all human societies into three stages: pre-class, class, and classless. Particular details of Indian history were not fully taken into consideration. In *HSTAI*, on the other hand, he locates the Buddha and the six heretics against the backdrop of the Second Urbanization, following the discovery and use of iron in eastern India, and then to the transition from tribe to state. V. Gordon

Childe seems to have exerted greater influence in this new approach. Chattopadhyaya appears to have discovered the reason why "all history must be studied afresh". In a letter to Conrad Schmidt (1890), Engels cautioned long ago:

[O]ur conception of history is above all a *guide to study not a lever for construction after the manner of the Hegelians*. All history must be studied afresh, the conditions of existence of the different formations of society *must be individually examined* before the attempt is made to deduce from them the political, civil-legal, esthetic, philosophic, religious, etc. notions corresponding to them. (Selsam and others (eds.), 71. Emphasis added)

Marx too in a letter to the editor of a Russian journal (end of 1877) declared the same even earlier:

[E]vents strikingly analogous but taking place in different historic surroundings led to totally different results. But studying each of *these forms of evolution separately* and then comparing them one can easily find the clue to this phenomenon, but one will never arrive there by the universal passport of a *general historic-philosophical theory, the supreme value of which consists in being super-historical*. (Selsam and others (eds.), 71. Emphasis added)

Chattopadhyaya proved himself to be a truly creative Marxist by choosing the route suggested by the founders of historical materialism. Instead of following an over-generalized super-historical theory, he studied the Buddha and the six heretics individually, separately in the context of their own place and time and arrived at his conclusions. He did not hesitate to modify his earlier views in course of his research and presented his new findings boldly and emphatically. This should and certainly would guide future researchers in this field.

Notes

¹The full article was first published in *New Age* (monthly), the theoretical journal of CPI, in August 1958.

²So long the date of the Buddha's death was commonly accepted as c. 486 BCE but recently on the basis of archaeological evidence the date has been brought down to c. 400 BCE. See Norman, 50-51.

³For details see Bronkhorst, 39 and 144n2.

⁴The influence of both Christopher Caudwell (*Illusion and Reality*, 1937) and George Thomson (*An Essay on Religion*, 1950) are only too apparent in this phraseology. Although Chattopadhyaya did not mention Caudwell in the bibliography of *Lokāyata* (as he did Thomson), it is evident that the concept of illusion and reality as found in *Lokāyata* is not derived from F.H. Bradley (*Appearance and Reality*, 1893) but from Caudwell. It may also be remembered that Thomson wrote the preface to Caudwell's *Illusion and Reality* (signed "G.T.") and took part in "The Caudwell Discussion" in *The Modern Quarterly* (Spring, 1951).

Rahul Sankrityayan's critical evaluation of the Buddha in *Darsan Digdarsan* (1944) (mentioned in the *Lokāyata* bibliography), too, might have influenced Chattopadhyaya to some extent.

⁵This small book purports to be a general introduction to the study of philosophy, being the first volume of an eight-volume series, *Global Philosophy for Everyman*, edited by Chattopadhyaya himself.

⁶This metaphorical description has an intertextual relation to the title of Roger Garaudy's

booklet, *Literature of the Graveyard* (New York, 1948). Garaudy was then a leading member of the French Communist Party.

It will be immensely rewarding to compare and contrast the views of D.D. Kosambi and Chattopadhyaya concerning the Buddha and the six heretics in their seminal works, *An Introduction to the Study of Indian History* (1956) and *Lokāyata* (1959) respectively (Kosambi added some new observations in *The Culture and Civilisation of Ancient India in Historical Outline* (1965) and the second edition of 1956). But we must defer this discussion lest the digression would lead us away from the point we are now concerned with. I propose to stop here only by pointing out how two leading Indian Marxists approached the question from the same angle and *ultimately* arrived more or less at the same conclusion. However, it should not be overlooked that, in spite of their basic similarity of approach, they had reached almost opposite conclusions in the 1950s. The starting point even then was the same: transition from the pre-class society (tribe) to the class-divided society (state). Yet Chattopadhyaya harped on the illusory nature of the chief heretics. Kosambi, on the contrary, had found many positive elements in their teachings and suggested a continuity found in later developments of Indian philosophy (Ajita Kesakambala and the Lokāyata, Pakudha Kaccāyana and the later Vaisesikas, for instance). Chattopadhyaya, as has been shown above, too came to the same conclusion much later, specially when he studied the philosophical systems of India in relation to history of science and technology.

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'Hindu Science': Vivekananda's Strange Volte-face

Ashish Lahiri

Particularly susceptible to summer heat, Swami Vivekananda went to Mount Abu in mid-April 1891 where he met Raja Ajit Singh of Khetri. From 25 July to 3 August he spent with Ajit Singh there and went on to stay at the King's palace at Khetri where he remained till 28 October, fully enjoying the princely hospitality. At the invitation of the Raja he once again went to Khetri and stayed there from 21 April 1893 till 10 May 1893. Immediately after, he left for his historic tour of America. Indeed, Ajit Singh's material help was substantial behind that trip.¹

But, apart from providing material help and hospitality, Khetri is important in his life for other reasons too. It is from Pandit Narayandas of Khetri that he learnt the maha-bhashya (the grand critique) of Panini Sutra. He reverently called the Pandit his "Professor." Moreover, he also discussed scriptures with two other scholars of Khetri, namely Sankarlal and Sundarlal. Pandit Sankarlal was to become a disciple of Swamiji.

It is to this Pandit Sankarlal that he wrote a letter from Seth Ramdas Chhabildas's home in Bombay on 20 September 1892, some eight months before leaving for America. One may note that subsequent to writing this letter he once again visited Khetri. In this letter, he made some unusually terse comments on the 'dearth of those sciences which are the results of observation and generalization.' These comments and the general viewpoint expressed in the letter are strangely at variance with what he would preach just a few months later in America. Let us examine what Swamiji has to say in this letter about the characteristics of "Hindu" science or the lack of it.

Expressing 'unbounded gratitude' to Pandit Sundarlalji and to 'my Professor', i.e. Pandit Sankarlal, Vivekananda writes:

Now I would tell you something else. The Hindu mind was ever deductive and never synthetic or inductive. In all our philosophies, we always find hair-splitting arguments, taking for granted some general proposition, but the proposition itself may be as childish as possible. Nobody ever asked or searched the truth of these general propositions. Therefore, independent thought we have none to speak of, and hence the dearth of those sciences which are the results of observation and generalization.

Before proceeding any further, we would note that although Vivekananda is here apparently towing the lines propagated by Vidyasagar, Akshay Kumar Datta and early Bankim Chandra, there are substantial differences between the two viewpoints.

'In all our philosophies?'

According to Vivekananda, all our philosophies suffer from the alleged abhorrence of experiment and observation. Both recent and Vivekananda's contemporary research point to the fact that, if anything, this idea is one-dimensional and oversimplified. Vivekananda's classmate at the Scottish Church College and the doyen of Indian philosophy, Brajendranath Seal very

clearly stated: 'The Sankhya-Patanjali system accounts for the Universe on principles of cosmic evolution; the Vaisesika-Nyaya lays down the methodology of science, and elaborates the concepts of mechanics, physics and chemistry. The Vedanta, Purva-Mimamsa, and in a less degree the Bauddha, the Jaina, and the Carvaka systems make incidental contributions on points of specific interest, but their main value in this regard is critical and negative.'³ Other scholars have at various times, in their own way, pointed to the difference between the various strands of Indian philosophies so far as the development of empirical ideas is concerned. Simon Blackburn notes that 'Nyaya generally tends towards a realist metaphysics, and anticipated many later western concerns, for instance with the problem of distinguishing true from misleading perceptions, with induction, and the nature of knowledge via testimony.'⁴ Recalling the advice offered by Javali, 'a sceptical pundit', to Ram ('Follow what is within your experience and do not trouble yourself with what lies beyond the province of human experience'), Amartya Sen observes: 'This observational focus is, of course, in line with the materialism of Lokayata and the Carvaka system.' He goes even further, showing that 'the rationale of the Lokayata approach is quite close to a methodological point that Francis Bacon would make with compelling clarity in 1605 in his treatise *The Advancement of Learning*.' Indeed, the flowering of Indian science in the Gupta period owed much to this 'tradition of scepticism and questioning.'⁵ Recently Prof. Ramkrishna Bhattacharya, while calling Charvaka 'the most uncompromising materialist school of philosophy in ancient India', has also demonstrated that 'there is enough evidence to show that the Carvaka-s ... did admit inference in so far as it was grounded in perception.' He also establishes 'the fact that there existed a pre-Carvaka school of materialism in India.'⁶ How can then one so sweepingly comment that 'independent thought we have none to speak of, and hence the dearth of those sciences which are the results of observation and generalization'? Even if we leave out everything else, was not Indian medicine clearly a triumph of this empirical approach?

As a matter of fact, this comment of Vivekananda's had so embarrassed the editor of the volume that in a footnote he felt compelled to inform that 'In later days he [Vivekananda] acknowledged that India gave birth to many sciences, though they developed elsewhere.'⁷ We shall presently come to what the 'changed' Vivekananda preached, but here it should be noted that although he has often made contradictory remarks on many things (for example, on the utility or otherwise of the caste system), such an editorial attempt to draw attention to his 'later' change of opinion is rare indeed. One does, however, appreciate the editor's predicament. First of all, here is a great man known for his super-human intellect and memory and yet making a plain faux pas. This is all the more surprising because nine years prior to this letter Akshay Kumar Datta had presented in the celebrated introduction to the second volume of his *'Bharatbarshiya Upasak Sampradaya'* a detailed and differential account of the Indian philosophies from the Baconian standpoint. Even earlier, in 1873 Bankim Chandra in his essay *'The Study of Indian Philosophy'*⁸ had analysed the successes and the lapses of the Indian philosopher-scientists. How could Vivekananda miss these eminent analyses?

Secondly, the way Vivekananda chastises 'Hindu' science in a global manner demolishes his Hindu-nationalist image completely. On the face of it, he was following Vidyasagar's dictum that 'the Samkhya and Vedanta are false systems of philosophy'. This cannot but embarrass a missionary editor. Strangely enough, the Bengali edition of the works of Swami Vivekananda, while incorporating a translation of this letter, does not carry this editorial caveat.

Reasons for Failure

Vivekananda next raises the all important question: why did the 'Hindus' fail in empirical science? He confidently answers:

From two causes: The tremendous heat of the climate forcing us to love rest and contemplation better than activity, and the Brahmins as priests never undertaking journeys or voyages to distant lands. There were voyages and people who travelled far; but they were almost always traders, i.e., people for whom priestcraft and their own sole love for gain had taken away all capacity for intellectual development. So their observations, instead of adding to the store of human knowledge, rather degenerated it. For, their observations were bad, and their accounts exaggerated and tortured into fanastical shapes, until they passed all recognition.

In short, oppressive summer heat, circumscribed priests and the outgoing traders' "sole love for gain" — these are the factors that stood in the way of the development of empirical science in India. It is because of these factors that the tired Hindu mind became idle and estranged from reality on the one hand and crassly this-worldly on the other.

And yet, quite a few hypotheses trying to explain the decline of Indian science were ready at hand. In 1883, Datta had lamented that because of the absence of an empiricist philosopher like Bacon or a positivist like Comte, the great achievements of Kapila or Kanada could not "grow, blossom and fructify". Bankim Chandra in 1873, while agreeing that excessive reliance on deductive logic was at the root of the decay, had accused theology as being chiefly responsible for this. We have seen how the Baconian Vidyasagar in 1853 had denounced Sankhya and Vedanta as 'false systems of philosophy'. Another illustrious contemporary of Vivekananda's, Prafulla Chandra Ray had later diagnosed that Sankara's 'advaitabad' on the philosophical side and the post-Buddha casteism on the social side were among the major factors responsible for the decline of the once-glorious Indian science. None of these thinkers had condemned 'Hindu' philosophies en masse for this decline.

Vivekananda's difficulty lay elsewhere. It was impossible for him to critically examine the above factors for ideological reasons. Hence the either/or approach. Just consider: 1) Being a follower of the anti-Buddha Sankaracharya who preached 'advaitabad', how could Vivekananda denounce 'mayavad' as one of the harmful influences? 2) Being a theist who embraced ritualistic deity-worship, how could he accept, even examine, the materialistic, empirical logical method of the Carvakas based on experiment? 3) Being a religious leader for whom theology formed the inviolable basis for all argument, how could he, like Bankim, castigate an excess of theology as detrimental to the growth of empirical thinking? 4) Being a Hindu nationalist who considered the pre-Buddha Indian social system ideal, he always prevaricated in denouncing the caste system. In one place he would say that by stultifying competition, this system has finished the Hindus. In another place he would say with equal confidence that by stultifying competition, this system had helped sustain the Hindus through the vicissitudes of history. Unable for ideological reasons to consider any of the above hypotheses as the causative factors for the decline of Indian science, his entire ire fell on the narrow-minded priests. This ire is entirely justified. However, without a mention of the chief philosophical and social reasons, this castigation of the priests alone smacks of a kind of escapism.

In the chain of reasons cited by Vivekananda for India's failure in science, the weakest

link is the traders' 'love for gain'. For it is an established fact of history of science that it was the traders' love for gain that had promoted science everywhere — in Egypt, in China, in Europe, in the Arab countries, even in Buddhist India.

On to the Other Extreme

The editor of the *Letters of Swami Vivekananda* has correctly reminded us that Vivekananda had changed his opinion expressed in this letter of 1892. The fact is, he took the equally uncritical path to land at the opposite pole. A few examples will suffice. In 1896 he opined that the 'Hindu philosophical doctrines' are in wonderful conformity with 'all the discoveries of modern science'; so much so that 'whatever the lacunae, they are all on the side of modern science'.⁹ He went on to assert: 'Modern scientists are gradually coming round to agreeing with the ancient sages and to the extent that the scientists agree with the ancient sages, there is no problem.' And yet, just four years before this, he believed that 'independent thought we have none to speak of, and hence the dearth of those sciences which are the results of observation and generalization.' One wonders through what research, through the discovery of what new facts did he arrive at this diametrically opposite view? The explanation is sometimes offered that he was speaking to the West and eulogising India's past was a sine qua non for a nationalist like him. If this be true, then it must be accepted that the truth-content of his statements is virtually nil; what mattered was the immediate propaganda-value. Was he not too great a thinker to be belittled thus?

Newton's Law of Gravitation: Vivekananda and Jogesh Chandra

In this context, it might be profitable to discuss a similar kind of change of opinion in the great polymath Jogesh Chandra Ray-Vidyanidhi (1859-1956), a little-discussed contemporary of Vivekananda's. Jogesh Chandra has discussed these matters in detail in his magnum opus *Aamaader Jyotish O Aamaader Jyotishi* (Our Astronomy and Our Astronomers, 1903). This professor of botany and physics at the Ravenshaw College, Cuttack, was 'under the impression that there is nothing worth knowing in our astronomy.' Then he met Mahamahopadhyay Samanta Sri Chandrasekhar Samanta, who did not know English. 'After a short acquaintance with him' Jogesh Chandra could realize that 'even in the common *panjikas* then in vogue there were some interesting calculations and that prior to the invention of the telescope and the advent of Copernicus in Europe, our astronomy compared very well with European astronomy.'¹⁰ Jogesh Chandra noted that in the absence of astronomers who could calculate the paths of the planets even without the help of telescopes, 'anarchy prevailed' in the world of *panjikas*. Chandrasekhar was, however, a man who could make such calculations. Encouraged by his feat, Jogesh Chandra started studying Indian astronomy in real earnest and published in 1903 his classic. It's interesting to note that while he was elated at the achievement of Chandrasekhar, he was not blinded by it. Rather he mentioned that 'I am not saying that his calculations are mistake-proof. However, when pointed out, he would accept them without batting an eyelid.'¹¹

In a famous speech at California in 1900 Vivekananda had claimed: 'And the Indians knew about gravitation a thousand years before Newton was born.'¹² In his book, Jogesh Chandra specifically dealt with the statement of Bhaskaracharya on which Vivekananda — and many others — based this claim. Discussing Bhaskaracharya's arguments Jogesh Chandra writes:

'Thus, this earth-mass has no receptacle; it is held firmly in space by its own force. The great cosmos, the world, the humans, the demons all reside on its surface. What then of the series of receptacles described in the puranas? Bhaskar answers, "If this earth had a receptacle in the shape of a concrete body or of an animal, then that receptacle itself would require another receptacle to hold it and so on. This leads to infinite regression. ... Again, if you say the receptacle has an end, then it must be admitted that this final receptacle has remained steady through its own force. But, if that receptacle can hold on its own, why cannot the earth?..."¹³

Having discussed this, Jogesh Chandra raises the question: 'But, if the earth is situated in space, why does it not fall down?' He quotes Bhaskaracharya to answer this question:

Heavy bodies are attracted towards the earth by a force of attraction. It appears to us that the body is falling; whereas in point of fact, it is being attracted by the earth. The earth is enveloped on all sides equally by space, so where would it fall? Whoever may reside wherever on earth, he would feel it to be underneath him and himself remaining upon it.

Two persons standing at the two extremities of the earth's diameter are both standing with their heads down, like the shadow of a person standing on a river bank. Humans situated at the nether part of the earth are standing as steadily as we.'¹⁴

To this, Jogesh Chandra adds a footnote: 'Utpal has beautifully commented that "If the earth must fall, where would it fall? Downwards? But what is meant by downwards? *Pratiyogishchapekshadhah*. There is space on all sides of the earth.' That the notions 'up', 'down' etc. are all relative is now known to everyone thanks to the popular books on the theory of relativity; but the clarity with which this apparently strange concept was put forward one thousand years ago cannot fail to elicit admiration.

As an Indian nationalist, Jogesh Chandra was naturally proud of the great achievements of Varahamihira, Acharya Aryabhata and Bhaskaracharya. But at the same time he took pains to clarify that to speculate on some force akin to gravitation and to prove its working scientifically — which is what Newton did — are entirely different things. In a footnote he added in rather acidic terms that "some dilettantes" cite Bhaskaracharya's explanation ('It appears to us that the body is falling; whereas in point of fact, it is being attracted by the earth') to 'belittle Newton's discovery. These people must know, there's a hell-and-heaven difference between the two.'¹⁵ One might mention in passing that later Meghnad Saha was to elaborate on this in much more aggressive terms.

The difference between Jogesh Chandra and Vivekananda is thus obvious. The former was a man of 'hard' science; no amount of effusive nationalism could make him forget scientific methodology. On the other hand, Vivekananda was primarily a man of theology and philosophy. His overriding commitment was not to scientific methodology but to ideological expediency. Thus, while lecturing in the West, his patriotism carried him away so much that he often failed to do justice to facts of science and history. That is why he could jump from one pole to the other and be an extremist at both the poles.

Notes

1. Rajagopal Chattopadhyay, *Myth-Mukto Vivekananda* (Vivekananda minus myth), Kolkata, 1998, pp. 73-78. Translation mine.
2. *Letters of Swami Vivekananda*, Advaita Ashrama, Mayavati, Champawat, Uttaranchal, (First Edition 1940), Fifteenth Impression, May 2006, pp. 27-28

3. Brajendranath Seal, *The Positive Sciences of the Ancient Hindus* (1915), Sahitya Samsad Calcutta Reprint 2001, p.1
4. Simon Blackburn, *Oxford Dictionary of Philosophy*, OUP, Oxford, 1996, p. 266
5. Amartya Sen, *The Argumentative Indian*, Allen Lane, London 2003, pp. 26-27
6. Ramkrishna Bhattacharya, *Studies on the Carvaka/Lokayata*, Societa Editrice Fiorentina, Firenze 2009, pp. 9-10
7. *Letters*, p. 27
8. See *Bankim Rachanavali* Vol. 3 (ed. Jogesh Chandra Bagal), Sahitya Samsad, Calcutta (1969), Reprint 1998, pp. 142-148
9. *Swami Vivekanader Vani o Rachana*, Udbodhan, Kolkata, 1962, Vol. 3, p. 14. Translation mine
10. Jogesh Chandra Roy-Vidyanidhi, *Aamaader Jyotish O Aamaader Jyotishi* (Our Astronomy and Our Astronomers, Kolkata, 1903, Introduction . Translation mine
11. Jogesh Chandra Roy-Vidyanidhi, p. 134
12. *Swami Vivekanader Vani o Rachana*, 3:412
13. Jogesh Chandra Roy-Vidyanidhi, p. 341
14. Jogesh Chandra Roy-Vidyanidhi, p. 342
15. Jogesh Chandra Roy-Vidyanidhi, p. 341 **P A S**

Marxist Ethics, Determinism, And Freedom

John Somerville

If one wishes to discuss the role of determinism and the place of freedom in Marxist ethical teachings, which is the aim of this paper, two sets of problems must be distinguished. The first concerns the question whether it is possible to have any genuine ethics whatever, Marxist or otherwise, if a pervasive, naturalistic determinism is accepted. While this question is relevant to Marxism, it is not peculiar to it, and would have to be discussed in much the same way if we were dealing with the ethical teachings of naturalistic philosophers like Aristotle, Spinoza, Mill or Dewey. The question central to this set of problems is the age-old one: If each thing that happens has antecedently determined causes, and thus could not be different, can there be any such thing as a free moral choice, or even a moral value? The second set of problems concerns matters specific to Marxist ethics and determinism. That is, what makes Marxist ethics different from other ethical doctrines which accept the principle of universal natural causation? Let us deal with these questions in order.

In relation to the general role of determinism as it enters into the first set of problems, one should note that it is only from a rather restricted and special standpoint that any problem at all exists concerning the compatibility in principle of determinism and ethics. Two presuppositions must be at least tentatively made before any problem of importance can be posed in this connection : a) that moral values are in some special way concerned with "free" choices; b) that "free

choices" in the sense of choices free from a natural causal nexus are somehow possible. We must not forget that these are local presuppositions, so to speak, in no way inherently mandatory. In fact, upon close inspection b) is seen to represent pure mysticism, which we probably cannot avoid classifying as cognitively meaningless. I am not saying it is necessarily bad to be a pure mystic. Conceivably, it might be the most precious thing in the world. I am only saying that such a mystic can hardly present himself as holding a rationally provable position.

Why? Because he is claiming to get something (a choice) from nothing; and this claim simply cannot be made within the bounds of reason. Nor is there any logical need to make it, since there is ample evidence that a human choice is made through a complex human apparatus responding to natural causes. In short, choices are obviously caused, and the only way we can understand them rationally, that is, in terms of objectively convincing evidence, logic and proof, is to trace them to causes, each of which is part of a naturalistic chain. This is in fact what we do in much of daily life and in technical science. The only alternative to a naturalistic determinism in this context is to hold that human choices are exceptions to the rule of causation, that either they arise out of nothing, which would signify inexplicable mystery, or that they arise out of something "spiritual," but do so independently of natural or humanly understandable conditioning, which would signify equally inexplicable magic. Indeed, it seems doubtful that any alternative to a general determinism can even be stated in rational terms, let alone validated by rational methods.

In any case, it is probably fair to say that the strongly felt objections in our cultural tradition to accepting a pervasive determinism have seldom if ever been grounded in rational considerations. They have usually sprung from feelings of moral revulsion which might be expressed by saying, "If things were like that it would be just too horrible. We would only be cogs in a machine, or, as Dostoevsky's *Notes from Underground* puts it, piano keys or organ stops. We would not be free; we would have no free will. We would not be moral agents at all."

A moment's calm reflection will of course convince anyone that such statements, even if they were true, would not constitute arguments or evidence against universal natural causation, but are the expressions of feelings (or phantasm), born of hope and grown into habit, may have to be laid aside. But we all know that whatever the rationally obtainable truth is, it must be faced as the rationally obtainable truth, as the only basis of effective action in the natural world. When it is faced it usually ceases to seem so horrible, probably because the spirit is fortified and gratified by the very exercise of courage. Hope will always seek a more viable framework, for that is its nature, while habit builds anew at more complex levels. And if the stubborn underground man of Dostoevsky's *Notes* should continue to cry out that it is just reason which he can never bind himself to accept, that if it is all a question of twice two yielding four, this simply makes it all the worse, then we can only remind him, as Aristotle would have reminded him (but on our part with more democratic charity and more effective remedies, let us hope), that he had already pronounced his own diagnosis in the very first words of his remarkable underground testament: "I am a sick man."

Though the logic of the general situation may thus favor the scientifically oriented naturalist, he must still answer the old question: If causation or determinism be accepted as the general rule, how are values to be construed? What is a moral act? Is free will possible? The Answers are not really difficult, nor have they ever been. Values do not cease to be values by being caused. If I value life, logic, health, happiness, love, creativity, and operatively above all, international

peace (because it is in the greatest jeopardy, and its jeopardy threatens all the rest), I am not in the least discomfited by learning that all these values, and especially international peace, have causes. On the contrary, I am encouraged, and sustained in hope, because it gives me something to do as a philosopher. It invites the play of my reason. Where there are causes, mind can operate to discover them, and preventions may be worked out. Now suppose international peace were the result of some kind of "free" undetermined processes, not traceable rationally to naturalistic patterns of cause-effect. I should be reduced to something like the meagre scope indicated on one of the stamp cancellation devices used by our Post Office : "Pray for peace."

Now, what is a moral act? Naturally, it is one which serves to attain or express moral values. If values should conflict, the agent must of course decide which takes precedence; and he will decide in the light of his nature and the history of his mind and feeling. How can we tell which acts will attain or contain the desired value? In a context permeated by causation we can tell through knowledge and intelligence. If the context of action were not a causative one, were not pervaded by natural law, there would be nothing to turn to save revelation, luck, or prayer. Intelligence would be of no avail; in fact, it might even be a hindrance, diverting one into fruitless paths.

But what of free will? The question can be answered on condition that the terms be defined. What is meant by free? In other words, what do you want your will to be free from? If you want your will to be free from factors like ignorance, cruelty, bigotry, spitefulness, intolerance, unfairness, arrogance, avarice, greed, conceit, ungratefulness, dishonesty, laziness, rashness, or anything else along these lines, a job can be done. And we have reason to think that a better job can be done in the future than was done in the past. The reason is, these factors have causes; and we can discover more and more about the causes, and then apply this knowledge. But if you are not satisfied with this sort of thing; if, like the Dostoevskian underground man, you want your will first and foremost to be free from causation, how can any job be done? If your will were free from causation it would not exist in the natural world; if it exists, we can discover no way in which it can be free from natural causation.

Strangely, people often seem to think their choices would not be "their own" if the choices were admitted to be products of causation. If such people were consistent, would they not reason, with equal melancholy, that their babies were not their own, that their eyes, ears, hearts, lungs, and livers were not their own? You call your arm your own; yet you readily admit that every particle of it is the result of lines of causation – through heredity, environment, nutrition, exercise, and the like. Why then, is it your own? It is your own because it is joined to your shoulder and no one else's, and the whole wonderful growth took place in and through you. Your choices become your own in exactly the same way, because they take place in and through you. What we call a free choice is not and could not be free from causes. What happens is that we call it free if the end it the operative causes involved are such as we accept or respect. In the end it is as simple as that.

In this connection a specifically Marxian formulation has been the occasion of frequent debate and question, partly because it smacked of the paradoxical. That is: freedom is the recognition of necessity. This thought, associated in its pat form of expression with Engels, has been variously translated into English. It is rendered in the Burns version of *Anti-Duhring* as, "... freedom is the appreciation of necessity."² Engels' original German reads: "... ist die Freiheit die Einsicht in die Notwendigkeit."³ Clearly, it would be better to translate this as, "freedom is insight into necessity." In translating it sometimes happens that the more literal rendering is not the

better one: but in this case there can be no doubt that it is better. The word "insight," much closer to "Einsicht" than is "appreciation" or "recognition," pointedly suggests, as part of its meaning, a basis for better action and control (which was central to Engels' thought), while the other terms are weaker in this respect, and more diffuse. In fact, they could give rise to gross misunderstanding, and have often done so. For example, if a person were the victim of racial persecution there is certainly a sense in which he might "recognize" or "appreciate" the causal factors involved without thereby gaining freedom from such persecution. As Engels was thoroughly aware, the person would have to act on the basis of cause-effect knowledge in order actually to gain his freedom. "Insight into" more readily suggests this process of action functionally connected with knowledge than "recognition" or "appreciation" does.

It is interesting and instructive also to trace the Russian translations of this passage. Lenin, in an early work, "The Economic Content of Populism" (1895) translated Engels' key term, *Einsicht*, by means of the Russian word which most literally and unambiguously signifies understanding, *ponimanie*: "Svoboda est ponimanie neobkhodimosti."⁴ (Freedom is the understanding of necessity.) In his later work, *Materialism and Empirio-Criticism* (1909), Lenin again translated this passage into Russian, using a different word to render *Einsicht*, the word *poznanie*, which has a technical philosophic flavor, and means "cognition." In the Kvitko translation of *Materialism and Empirio-Criticism* into English, this passage appears as, "... freedom is the recognition of necessity."⁵ But "recognition" misses the point. It does not convey the philosophic sense of "cognition," the sense of thorough understanding, inclusive of functional, operative possibilities.

Part of the difficulty has been that the brevity of this traditional formulation, so often repeated in bare and injudiciously blunt fashion by both advocates and opponents of Marxism, gives rise to vagueness and ambiguity, as extreme bluntness always can. However, when the context of Engels' exposition is seriously examined, the key to the seeming paradox is found. It is the thought that the most dependable way to gain freedom to do X, or freedom from Y, is to know and utilize the causal conditions relating to X, or to Y. Thus the formula, "Freedom is the recognition of necessity" (or any variant replacing "recognition" with a sharper term), might be stated at somewhat greater length as: Freedom is best attainable if you understand and utilize the specific patterns of causation (necessity) which pervade your situation. That is, freedom *from* disease is gained by applying knowledge of the causes basic to the prevention, and cure of disease. Freedom to study is gained by being in possession of the causal preconditions of studying.

The blunt formula is brought up by Engels in connection with Hegel, to whom in fact he traces it. "Hegel," he says, "was the first to state correctly the relation between freedom and necessity. To him freedom is the appreciation of necessity."⁶ We may note in passing that this involves a clear error on Engels's part concerning the history of philosophy, as Spinoza, long before Hegel, had worked out this whole relationship with superb logical precision. It is significant that Plekhanov, speaking as a Marxist, once observed that dialectical materialism could be considered a form of Spinozism.

What is perhaps most specifically Marxian in regard to the role of determinism in ethics is the systematic and realistic working out of the whole set of social conditions, the social and technological etiology, necessary to the attainment of the basic ethical values on the part of the great majority of people in the concrete circumstances of the modern historical epoch. One has in mind here not simply the point that human ethics can be treated responsibly only in a social context. In its general sense Aristotle had kept that point in the center of his *Ethics* and *Politics* (which he

conceived as one work, not two – it is we who have split up the work), and demonstrated its cogency in characteristically massive fashion. But Aristotle thought of this connection in local terms of irredeemably aristocratic limitations, including even a justification of slavery. It was necessary to work out the whole thing anew within the widened horizons of democratic aspirations, a recognition of social evolution, a new level of science, and an existing society of fluid industrial capitalism moving (partly spontaneously) in a socialist direction.

That this was a breathtaking, morally exhilarating enterprise is a fact almost impossible to avoid sensing in any extensive reading of the works of figures like Marx, Engels, and Lenin, whether or not one agrees with their conclusions. It is well nigh incredible that philosophically experienced commentators have sometimes pronounced Marxism to be an amoral system. The connection with Christian values such as brotherhood, charity and the raising of the downtrodden is so clear that Marxism has just as often been characterized as only a thinly veiled secularization of the Judeo-Christian eschatology. In fact, Marxism has sometimes been chastised on both counts simultaneously by one and the same critic, such as Bertrand Russell in his *A History of Western Philosophy*.

It is likewise almost impossible for anyone who has stayed any length of time in one of the present Communist countries to avoid sensing the strong moral, indeed often moralistic, tone which pervades the society, in spite of well known and highly publicized discrepancies. In fact, many of those who have fled such a society have done so not because they found it immoral in relation to its own value framework, or essentially amoral, but because they could not accept the collectivism mass oriented value system, which they found all too insistently applied in practice. In my discussions with professional philosophers in the Soviet Union they consistently maintained that the basic values which they hold, such as full physical, mental and emotional development of all people, and social justice as manifested in a classless society in terms of the principle, "From each according to his ability, to each according to his need," are free from subjectivity, and capable of being proved objectively in the scientific sense.

Much has sometimes been made of the claim that there is an essential inconsistency in historically inevitable, and at the same time exhorting people to take part in the struggle to bring about that victory. We have already set forth the logic of the Marxist's reply. It is the same that a physician uses when he says to the patient: "You will certainly recover. The main thing is, follow my directions." The physician holds that recovery is inevitable because he is counting on the patient responding to directions since the patient wishes to live. The Marxist holds that the victory of socialism is inevitable because he is counting on society responding to certain programs since it wishes to live. Either or both predictors could conceivably be wrong in fact; only time will tell. But neither the physician nor the Marxist is holding a demonstrably inconsistent position. Incidentally, neither one says the predicated outcome is good because inevitable. Each says it is good, and is inevitable.

Here we can see also where Marxism draws the line between its type of naturalistic-scientific determinism, and fatalism. The fatalist says: "Since my recovery is inevitable, I need do nothing." The scientific determinist says: "My recovery is inevitable since I am caused to do something, and through knowledge to do the right thing." Fatalism is seen to spring from a form of determinism which Marxism rejects as "absolute" and "metaphysical." The Marxists have always pointed out, as Aristotle did, that there is a relative sense in which chance and accident exist (not as uncaused, but as unintended, or unplanned). Most importantly, however, they disengage them-

selves from absolute and fatalistic determinism by their conception that, while causes create the will of man, man's will in turn and of necessity becomes itself a creative cause.

1. New York; International Publishers, p. 130.
2. *Herrn Eugen Dittoing's Umwillung der Wissenschaft*. Stuttgart: Dietz, p. 112.
3. *Sochinenia*. Izdanoe 4, torn 1, 400. "Ekonomicheskoe soderzhanie narodnichestva."
4. *Collected Works of V.I. Lenin*, Vol. XIII, New York : International Publishers, p. 154.
5. *Anti-Duhring*, Burns translation, p. 130. The second is the full sentence, a portion of which was quoted above.
6. New York, Simon and Schuster, 1945, p. 363 and p. 788.

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P A S

Chemistry in Ancient India

P. C. Ray

[Born in Jessore (now in Bangladesh) Prafulla Chandra Ray (1861-1944) received his D.Sc. from Edinburgh University in 1887 and later taught Chemistry in the Presidency College, Kolkata. He could inspire his students to go for research and advocated the use of mother tongue as the medium of instruction. Himself a researcher and a chemist of repute, he was the founder of the Bengal Chemical and Pharmaceutical Works, the first national chemical factory in undivided Bengal, long before the Swadeshi Movement (1905). Moreover he was a philanthropist and an active participant in the anti-imperialist agitations. He is also one of the pioneers in the field of history of science. His *History of Hindu Chemistry* in two volumes (1905-1909) is marked by his interest in philosophy of science as well. He invited Brajendranath Seal to contribute essays on the mechanical, physical and chemical theories as well as on the 'scientific methods of the Hindus' that appeared in volume 2 and now form two chapters in Seal's *The Positive Sciences of the Ancient Hindus* (1915).
Ramkrishna Bhattacharya]

(The following is the full text of the address delivered by Dr. Ray before the Madras University in February, 1918.)

I shall endeavour to unfold before you to-day a forgotten chapter in the history of the intellectual development of the Indian people, namely the cultivation of the Experimental Sciences. It is generally taken for granted that the Hindus were a dreamy, mystical people given to metaphysical speculation and spiritual contemplation. Due credit is, no doubt, assigned to them for the production of such priceless treasures as the Upanisads, the Six Systems of Philosophy, including the abstruse Sāṃkhya and the *Gītā*, with their transcendental teachings. But the fact that the Hindus had very large hand in the cultivation of the experimental sciences is hardly known in these days.

It should, however, be borne in mind that Experimental Sciences such as we now understand them are of very recent origin and growth, even in Europe.

The controversies of the Schoolmen in the Middle Ages lend colour to the theory that in approaching the discussion of the most evident truths of nature the learned men of Europe

always avoided the test of appealing to experiments. As some of you are aware, a solemn discussion arose among the foundation members of the Royal Society as to whether a dead fish weighed more than a live one, though it never occurred to them that the solution of the problems lay in directly weighing a fish - live and dead. When the Royal Society was founded in 1662 by Boyle, Hooke, Christopher Wren and other students of Nature, Hobbes sneered at them as "experimentarians". If such was the respect for accurate knowledge even in England in the 17th century, we should not be justified in applying a rigid test to the knowledge of India in the past ages.

Experiments and observations constitute the fundamental bases of Sciences. It is naturally a relief to come across such dicta as laid down by two standard works on Hindu Chemistry, namely *Rasendra-cintāmaṇi* by Ramchandra, and *Rasa-prakāśa-sudhākara* by Yaśodhara, both belonging to the 13th or 14th century A.D.

Says the former: "That which I have heard of learned men and have read in the Śāstras but have not been able to verify by experiment I have discarded. On the other hand those operations which I have according to the directions of my sage teachers, been able to perform with my own hands - those alone I am committing to writing.

"Those are to be regarded as real teachers who can verify by experiments what they teach - those are to be regarded as laudable disciples who can perform what they have learned - teachers and pupils, other than these are mere actors on the stage."

Yaśodhara, the author of the later, observes: "All the chemical operations described in my book have been performed with my own hands - I am not writing from mere hearsay. Everything related is based upon my own conviction and observations."

The progress of chemical knowledge among the ancient nations has always had a fascination for me. The classical works of Thomson, Hoefer and Kopp have been favourite companions ever since. I was a student at Edinburgh now 35 years ago. In the course of my studies in this field I was naturally led to an inquiry into the exact position which India occupied therein, and with this view I undertook a systematic examination, from the chemical standpoint, of the *Caraka*, the *Suśruta*, and such other standard works of the Āyurvedic and Iatro-Chemical periods as had escaped the ravages of time.

My investigations in this direction naturally brought me into communication with M. Berthelot some twenty-one years ago - a circumstance which proved to be a turning point, if I may say so, in my career as a student of the history of Chemistry. The illustrious French savant who was then recognised leader of the chemical world, who has done more than any other person to clear up the sources and trace the progress of Chemical Science in the West, expressed a strong desire to know all about the contributions of the Hindus, and even went in length of making a personal appeal to me to help him with information on the subject. In response to his sacred call, I submitted to him, in 1898, a short monograph on Indian alchemy based chiefly on *Rasendrasāra-saṃgraha*, a work which I have since then found to be of minor importance and not calculated to throw much light on the vexed question as to the origin of Hindu Chemistry. M. Berthelot not only did me the honour of reviewing it at length but very kindly presented me with a complete set of his monumental work, in three volumes, on the Chemistry of the Middle Ages, dealing chiefly with the Arabic and Syrian contributions on the subject, the very existence of which I was not till then aware of. On perusing the contents of these works I was filled with the ambition of supplement in them with one on Hindu

Chemistry.

I confess, when I first entered into the self-imposed task, I was filled with misgivings for I apprehended that the materials were meagre and fragmentary. I set vigorously to the task. As I proceeded with my labour of love I was simply appalled by the number of old, worm-eaten Chemical Manuscripts which began to pour in from every quarter of India - from Madras, Tanjore, Ulwar, Kashmir, Benares, Kathmandu (Nepal) and last but not least from Tibet - the *bsTan-gyur* or the Encyclopaedia comprising the wisdom of India - being now accessible to us since the temporary occupation of Lhasa in 1904-05. I was filled with the ecstasy which a prospector feels when he suddenly comes across a vein of precious metal after years of fruitless efforts. The discovery of such unexpected and forgotten mine of wealth amply sustained me during the 12 years of the best period of life although much difficulty was felt in apportioning my time between the demands of the library and the laboratory. I will now take you over to some of the results of my inquiry.

In the various seats of learning in ancient India, along with other branches of literature and science, medicine also formed an important subject of study. Some 2500 years ago the University of Taxila, of Jivaka Komāravacca was studying medicine under the sage Atreya. Now, there is a world of meaning hid under the term "Komāravacca", which is a Pali corruption of the Sanskrit "Kaumarabhrtya". A student of Ayurveda is well aware that the science of Indian medicine is divided into eight sections of which kaumarabhrtya or treatment of children's disease is one. Jivaka afterwards became the celebrated Court Physician to King Bimbisāra of Magadh, a contemporary of Buddha. We have thus historical evidence of the cultivation of Ayurveda in India several centuries before the birth of Christ. Now the branch of science which I have the honour to represent, namely Rasāyana, cannot, however, be traced to such an early date. Strictly speaking, Rasāyana does not mean chemistry. Its radical meaning is a medicine which promotes longevity, retentive memory, health, virility, etc. (*Caraka*, i. 2.6); in other words, it is the *Elixir Vitae* of the alchemists of the Middle Ages. Later on, in the Tāntric ages, Rasāyana was almost exclusively applied to the employment of mercury and other metals in medicine and at present it means *alchemy* or *chemistry*. In an alchemical treatise of the 13th or 14th century A.D., the author speaks of his subject as *Rasāyani vidyā*, i.e., the science of mercury and metals. In the celebrated work called *Rasaratna-samuccaya* (or, A collection of gems of mercury and metals), to which I shall have occasion to refer more than once subsequently, the author begins by offering salutation to 27 adepts or *rasasiddhi-pradāyaka*. The term *rasasiddhi-pradāyaka* is derived from *rasa*, mercury, *siddhi*, accomplishment, and *pradāyaka*, giver or bestower; it therefore means giver of accomplishment in mercurial preparation, i.e., an expert on alchemy. It is necessary to bear in mind that in the standard Ayurvedic works, e.g., *Caraka*, *Suśruta* and *Vāgbhaṭa*, there is scarcely any mention of mercury or its preparations.

Here it is necessary to make a slight digression in order to realise the impetus which the study of Chemistry received in ancient India. In Europe, the Middle Ages, chemistry - call it alchemy if you like - made considerable progress chiefly as a handmaid of medicine. In our country, though the pursuit of this science was made an auxiliary to the healing arts, it made rapid strides by entering into an alliance with the Yoga philosophy. According to this system, as you all know knowledge has to go through seven stages before it is perfect and eight means are prescribed by which this perfect knowledge can be obtained; of these *dharmaṇa*

(steadfastness), *dhyāna* (contemplation) and *samādhi* (meditation) are the essential constituents. When these last three are united, *samayma* follows and results in the acquisition of occult powers (or *siddhi*). In later times, the philosophy of the Yoga was pressed into service of science and degenerated into Tantrika rites, especially in Bengal.

What is it that made these Tantras the repositories of chemical knowledge? The answer is given in the words of *Rasārṇava* (lit. sea of mercury) itself, a most authoritative Tantric work on chemistry, which has been edited in the *Bibliotheca Indica Series* by himself in collaboration with Pandit Hariscandra Kaviratna. This work extols the virtues of mercury and its various preparations. Thus,

"As it is used by the best devotees for the highest end, it is called *pārada* (quicksilver)."

"Begotten of my limbs, it is, O Goddess, equal to me. It is called *rasa* because it is exudation of my body."

"It may be urged that the literal interpretation of these words is incorrect, the liberation in this life being explicable in another manner. This objection is not allowable, liberation being set out in the six systems as subsequent to the death of body, and upon this there can be no reliance and consequently no activity to attain to it free from misgivings. This is also laid down in the same treatise."

"Liberation is declared in the six systems to follow the death of the body."

"Such liberation is not cognised in perception like an emblic myrobalan fruit in hand."

"Therefore a man should preserve that body by means of mercury and of medicaments."

A few more typical extracts are given below which will throw further light on the subject:

"The body, some one may say, is seen to be perishable, how can then its permanency be effected? Think not so, it is replied, for though the body, as a complexus of six sheaths or wrappers of the soul, is dissoluble, yet the body as created by Hara and Gaurī under the names of mercury and mica may be perdurable. Thus it is said in the *Rasahṛdaya*.

"Those who without quitting their bodies have attained to new ones through the influence of Hara and Gaurī (mercury and mica), are to be praised as *rasasiddha* (alchemists). All *mantra*-s are at their services."

"The ascetic, therefore, who aspires to liberation in this life, should first make to himself a glorified body. And inasmuch as mercury is produced by the creative conjunction of Hara and Gaurī (the mica is produced from Gaurī), mercury and mica are severally identified with Hara and Gaurī in the verse:

"Mica is thy seed, and mercury is my seed. The combination of the two, O Goddess, is destructive of death and poverty."

"There is very little to say about the matter. In the *Rasesvara-siddhānta*, many among the gods, the Daitya-s, the Muni-s and mankind, are declared to have attained to liberation in this life by acquiring a divine body through the efficacy of quicksilver."

"Certain gods, Maheśa and others, certain Daitya-s, Kāvya (Śukrācārya and others); certain sages (Bālakhilyas and others); certain kings (Someśvara and others); Govinda-Bhāgabata, Govinda-nāyaka, Carvati, Kapila, Vyāli and others - these alchemists having attained to mercurial bodies and therewith identified are liberated though alive."

Now this alliance between alchemy and the Yoga Philosophy has already become cemented in the 11th century A.D. Thus, al-Bīrūnī, the celebrated Moslem contemporary of Mahmud of Gazni, who was as much at home in Arabic and Greek as in Sanskrit literature, says:

"The adepts in this art try to keep it concealed, and shrink back from intercourse with those who do not belong to them. Therefore, I have not been able to learn from the Hindus which methods they follow in this science and what element they principally use, whether a mineral or an animal or a vegetable one. I only heard them speaking of the process of sublimation, of calcination, of analysis, and of the waxing of talc, which they call in their language *tāḷaka*, and so I guess that they incline towards the mineralogical method of alchemy."

"They have a science similar to alchemy which is quite peculiar to them. They call it *Rasāyana*. It means an art which is restricted to certain operations, drugs and compound medicines, most of which are taken from plants. Its principles restore the health of those who were ill beyond hope, and give back youth to fading old age, so that people become again what they were in the age near puberty; white hair becomes black again, the keenness of the senses is restored as well as the capacity for juvenile agility and the life of the people in this world is even extended to a long period. And why not? Have we not already mentioned on the authority of Patanjali that one of the methods leading to liberation is *Rasāyana*?"

The number of works on alchemy which are connected with the practices of the Tāntric cult is simply legion and they rose to such importance in the 11th to 14th centuries A.D., if not earlier, as to claim a place among the *darśana*-s (philosophies) in vogue at this period. As you all know, the celebrated Mādhavācārya, Prime Minister of King Bukka I, of Vijayanagara, in his treatise on the sixteen systems of philosophy extant in his age - called *Sarvadarśana-saṃgraha*, devotes a chapter to *Rasesvara-darśana* or the "Science of Mercury." In his exposition of the subject the learned Head-Abbot of the Monastery of Śringerī, not far from the city of Madras, quotes at length from the standard works on Chemistry, notably *Rasārṇava*, *Rasesvara-siddhānta* and *Rasa-hṛdaya* of Govinda-Bhāgabata.

I shall now read one or two extracts from *Rasārṇava* from the chapter dealing with chemical apparatus and the colour of flames and the extraction of the metals from the ores (metallurgy). It is scarcely necessary to remind you that the Tantras are in the shape of Dialogues between the god Śiva and his consort Pārvatī.

ON APPARATUS AND THE COLOUR OF FLAMES

"Sri Bhairava said: The *rasa*-s, the *uparasa*-s, the metals, a piece of cloth, *bidam*, a pair of bellows, iron implements, stone pestles and mortars, the apparatus known as *koṣṭi*, mouth blowpipe, cow-dung, substantial wood (as fuel), various kinds of earthen and iron apparatus (e.g., crucibles), a pair of tongs and earthen and iron vessels, weights and balances, bamboo and iron pipes, the fats, the acids, the salts and the alkalis, the poisons - all these are to be collected and chemical operations begun."

EFFICACY OF THE APPARATUS

"For killing and colouring mercury, an apparatus is indeed a power. Without the use of herbs and drugs, mercury can be killed with the aid of an apparatus alone; hence an expert must not disparage the efficacy of the apparatus."

CRUCIBLES

"Earth of black, red, yellow and white colour, burnt husks of paddy, soot, earth from the ant-hill, well-brunt excrements of the goat and the horse, rust of iron" [varying proportions of the above ingredients are used for making crucibles, retorts etc.]

COLOUR OF FLAMES

"Copper yields a blue flame . . . that of the tin is pigeon-coloured; that of the lead is pale-tinted . . . That of the iron is tawny; ... that of the "peacock ore" (*sasyaka*) is red."

TESTS OF A PURE METAL

"A pure metal is that which, when melted in a crucible, does not give off sparks nor bubbles, nor spurts, nor emits any sound, nor shows any lines on the surface, but is tranquil like a gem."

COPPER FROM THE PYRITES

"*Māksika*, repeatedly soaked in honey, oil of *ricinus communis*, urine of the cow, clarified butter, and the extract of the bulbous root of *musa sapientum* and heated in a crucible, yields an essence in the shape of copper."

EXTRACTION OF ZINC FROM CALAMINE

"*Rasaka*, mixed with wool, lac, *T. Chebula*, and borax and roasted in a covered crucible, yields an essence of the appearance of tin; of this there is no doubt."

Let me now quote one or two extracts from *Rasaratna-samuccaya* or a "thesaurus of gems of mercury and metals." The author gives the following description of initiation of disciples and of a chemical Laboratory:

INITIATION INTO DISCIPLESHIP

"The instructor must be wise, experienced, well-versed in chemical processes, devoted to Śiva and his consort Pārvati, sober and patient. The pupil should be full of reverence for his teacher, well-behaved, truthful, hard-working, obedient, free from pride and conceit and strong in faith.

"Chemical operations are to be performed under the auspices of a ruler, who is God-fearing, who worships Śiva and Pārvati, and whose territory is free from anarchy; and the Laboratory, to be erected in the depth of a forest, should be spacious, furnished with four doors and adorned with the portraits of the Gods.

"Take of gold-leaf 3 *niska*-s in weight and quicksilver 9 *niska*-s and rub them with acids for 3 hours. Make the amalgam into a phallus (emblem of Śiva, the creative principle) ... The phallus to be worshipped in due form. By the mere sight of phallus of mercury, the sins accumulated by the killing of 1,000 Brāhmaṇas and 10,000 cows are redeemed.

"The science of mercury was communicated to man by Śiva himself and is to be imparted by the instructor to the disciple according to the prescribed rules with closed eyes.

"The science of mercury is to be strictly kept a secret ... If it is divulged, its efficacy is gone."

ON THE LABORATORY

"The Laboratory is to be erected in a region, which abounds in medicinal herbs and wells ... It is to be furnished with the various apparatus. The phallus of mercury is to be placed in the east, furnaces to be arranged in south-east, instruments in the south-west ... The *koṣṭi* apparatus for the extraction of essences of metals, the water vessels, a pair of bellows and various other instruments are also to be collected as also the threshing and pounding mortars,

the pestles, sieves of various degrees of fineness, earth for the crucibles, charcoal, dried cow-dung cakes, retorts made of glass, earth and iron, and conch-shells, iron-pans, etc.

"Those who are truthful, free from temptations, given to the worship of Devas and Brahmanas, self-controlled and used to live upon proper diet and regimen - such are to be engaged in performing chemical operations."

The mercurial and metallic preparations of the Tāntric age began slowly to supplant if not altogether supersede the treatments by the administration of herbs and simples as prescribed in the *Caraka*, *Suśruta* and *Vāghbata*, i.e., the genuine Āyurvedic System. Already as early as the 11th century, we find Cakrapāṇi Datta, himself a learned commentator of *Caraka* and *Suśruta* and author of the well-known medical work which goes by his name, not only recommending certain mercurial preparations but taking credit for introducing them. In fact, from the 12th century onwards inorganic (or metallic) remedies rapidly gained in popularity and this circumstance in its turn reacted upon the spirit of the age in giving fresh impetus to the study of Chemistry. I can quote *ad libitum* from the Chemical Tantras of this period, as treasures of all kinds lie scattered in exhaustible profusion in these works, but I need not tire out your patience by doing so. I hope I have indicated enough to show with what zeal and zest my favourite branch of science was once cultivated in Ancient India: I cannot conclude better than by quoting the apposite words of Bacon:

"We see then how far the monuments of wit and learning are more durable than the monuments of power or of the hands. For have not the verses of Homer continued twenty-five hundred years and more, without the loss of a syllable or letter; during which time infinite palaces, temples, castles, cities have been decayed and demolished? It is not possible to have the true pictures or statues of Cyrus, Alexander, Caesar, no, nor of the kings or great personages of much later years; for the originals cannot last; and the copies cannot but lose of the life and truth. But the images of men's wits and knowledges remain in books, exempted from the wrong of time and capable of perpetual renovation."

Thus it is that even after a lapse of 7, 8 or 10 centuries, Govinda, Somadeva, Nāgārjuna, Rāmachandra, Svachchanda-Bhairava and others appeal to modern India in eloquent terms from dust-laden shelves and worm-eaten tomes and manuscripts not to give up the pursuit of the Science they so clearly professed. As I find gathered round me the flower of the youth of Madras, may I join in the appeal so eloquently given utterance to by the chemist Nāgārjuna some 1000 years ago:

"For 12 years I have worshipped in thy temple, O Goddess; if I have been able to propitiate thee, vouchsafe unto me, thy devotee, the rare knowledge of Chemistry." If twelve years was considered as the irreducible minimum of time which an ardent student ought to spend in mastering the intricacies of our science at such a distant date how many years' assiduous devotion is required to master it to-day? Chemistry is the science *par excellence* which at present determines the fate of nations and the assiduous pursuit of it has given Germany an enviable predominance of world politics. There is, however, such a thing as pursuit of science for its own sake as also misapplication and prostitution of it. A genuine student of science is filled with joy ineffable as he finds that it enables him to unravel the hidden and mysterious laws of nature. If I could for a moment command the organ voice of Milton, I would exclaim that we are of a Nation not slow and dull, but of a quick, ingenious and piercing spirit, acute to invent, subtle and sinewy to discourse, not beneath the reach of

any point the highest the human capacity can soar to. Therefore, the students of learning in her deepest science have been so ancient and so eminent among us that writers of a blest judgment have been persuaded that even the School of Pythagoras took the cue from the old Philosophy of this land.

It is not for nothing that this ancient land of ours has been chosen by the all-wise Providence to be the birth-place of a Vālmiki and a Vyāsa, of a Kālidāsa and a Bhavabhūti, of a Aamkarācārya and a Rāmānuja, of a Nāgārjuna and a Yaśodhara, of a Varāhamihira and a Bhāskara and last but not least but not least of a Rammohan, a Keshabchandra and a Vivekananda. You, youngmen of the rising generation, will not, I trust, fail to play your part. As in the glorious palmy days of old, so in the days to come, it will depend upon you whether or not our dear Motherland is to hold her head aloft and secure for herself a recognised place in the comity of nations.

ANTIQUITY OF HINDU CHEMISTRY

(This is the second address delivered by Dr. Ray before the Madras University in February 1918)

Today's lecture is a natural sequence of the previous one. Very vague notions seemed to prevail even among oriental scholars of repute as regards the origin and antiquity of Hindu Chemistry - indeed many scholars openly expressed doubts as to whether there existed at all such a thing as Hindu Chemistry. Thus, Barth in his *Religions of India* incidentally observes:

"In regard to alchemy, anyhow, in which the Sittars are zealous adepts, they were disciples of the Arabians, although other Sivaites had preceded them in the pursuit of the philosopher's stone. Already, in his exposition of the different doctrines of Śaivas, Śāyana thought he ought to dedicate a special chapter to the *Rasēśvara-darśana*, or 'System of Mercury', a strange amalgamation of Vedāntism and Alchemy. The object contemplated in this system is the transmutation of the body into an incorruptible substances by means of *rasa-pāna*, i.e., the absorption into it of elixirs compounded principally of mercury and mica, that is to say, of the very essential qualities of Śiva and Gauri, with whom the subject of the operation is thus at length identified. This species of transubstantiation constitutes the *jivanmukti*, or state of deliverance commencing with this present life, the sole and indispensable condition of salvation. It is clear that the devotional formulae of the Vedānta are here only a sort of jargon under which there lies hid a radically impious doctrine; and it is not less clear that in this doctrine, which had from the fourteenth century produced a rather considerable literature, there is an infusion of Muhammadan ideas. The Arabs of Khalifat had arrived on these shores in the character of travellers or merchants, and had established commercial relations and intercourse with these parts long before the Afgans, Turks or Mongols, their co-religionists, became conquerors."

Burnell, again, under the influence of pre-conceived notions has been led into the same error, namely, that Indian Chemistry owed its origin to the Arabs. Thus, in this *Notice of Sanskrit MSS in the Tanjore Palace* he draws the conclusion from the colophon at the end of the chemical Tantra, *Rasasāra*, "I have composed my work after consulting the traditions and opinions of the Baudhas" - that by Baudhas (Buddhists) the author probably means the Mauhammadans." Had Burnell the patience to go over the body of the text of *Rasasāra* he would have been disabused of his sad error, for the author candidly admits that he derived

his information from the very fountainhead, namely the Buddhists of Bhoṭ or Tibet. I shall have to say much later on about Bhoṭ being the asylum of chemists. Now, as far as Chemistry and Arithmetic are concerned, the Hindus far from learning anything from the Arabs were their teachers. This is greatly acknowledged by the Araban writers themselves of the 10th and 11th century. Any one who is interested in the subject may consult my *History of Hindu Chemistry* in which a chapter has been devoted to the discussion of it. The outstanding feature is that in the reign of the Khalifs Mansur and Harun, Indian pandits went to Bagdad at their invitation and translated the *Caraka*, *Suśruta* and many other medical treatises.

The preparations of mercury began to be prescribed for external administration as early as the 11th century A.D., if not earlier. Cakrapāṇi prescribes *Rasa-parpaṭikā* (a variety of sulphide of mercury) for chronic diarrhoea, etc., and claims to its discoverer. In Europe, on the other hand, the discovery of this black sulphide of mercury, called also *Aethiop's Mineral*, is ascribed to Turquet de Mayerne in the beginning of the 17th century. In the European Histories of Chemistry, on the other hand, the credit of being the first to press chemical knowledge into the service of medicine and to introduce the use of the internal administration of mercurial preparations is given to Paracelsus the Great (1493-1531). But the French Parliament and the faculty of Medicine of Paris interdicted what was regarded as the dangerous innovation of Paracelsus.

The Mussalman Hakims had also a horror of the metallic mercurial drugs of the Hindu Pharmacopoeia. Thus, Taleef Shareef says: "My advice is to have as little to do with these as possible."

All this goes to prove that the Hindus not only did not borrow from the Arabians or from the western sources but were precursors in this field.

It is, however, in the domain of metallurgy, i.e., the extraction of metals from the native ores, that the Hindus made marked progress at an early age. The Indians were noted in fact their fame had spread far into the West - for their skill in the tempering of steel. The blades of Damascus were held in high esteem and it was from India that the Persians, and through them the Arabs, learnt the secret of the art. The wrought-iron pillar close to Kutub near Delhi which is some 1500 years old; huge iron girders at Puri; the ornamental gates of Somenath and the 24ft. wrought-iron gun at Narwar - are monuments of a by-gone art and bear silent but eloquent testimony to the marvellous metallurgical skill attained by the Hindus. Regarding the Kutub pillar, Ferguson says: "It has not, however, been yet correctly ascertained what its age really is. There is an inscription upon it, but without a date. From the form of its alphabet, Prinsep ascribed it to the 3rd or 4th century; Bhau Daji, on the same evidence, to the end of the 5th or beginning of 6th century. The truth probably lies between the two. Our own conviction is that it belongs to one of the Candra Rājas of the Gupta dynasty, either subsequently to A.D. 363 or A.D. 400."

Another authority says:

"It is well-known by every manufacturer of crucible cast-steel how difficult it is sometimes to get the exact degree of hardness to suit certain purposes, especially with reference to steel for cutting the blades, etc.. With the ordinary process endeavours are made to reach the required degree of hardness by selecting such raw materials as on an average have the required contents of carbon in order to correspond with the required degree of hardness as far

as possible. The natives [of India] reached this degree by introducing into their cast-steel an excess of carbon, by taking this excess gradually away afterwards, by means of the slow tempering process, having it thus completely in their power to attain the exact degree by interrupting this de-carbonising process exactly at the proper time in order to cast steel of a quality exactly suitable for the purpose."

The Hindus are also entitled to unique credit of being the first to extract zinc from its ore calamine (Sanskrit : *rasaka*). The process is so circumstantially described in *Rasaratna-samuccaya* and is so highly scientific that it can be quoted almost verbatim in any treatise on modern Chemistry. I shall purposely withhold here the technical details, which are reserved for a separate lecture to bona fide students of Chemistry to be delivered in the next few days. But I am permitted to point out that the skill displayed as also the marvellous powers of observation recorded therein extort our wonder and admiration. The exact date of discovery of the Hindu method cannot be ascertained but the description occurs in the chemical treatises of the 12th to 13th century A.D. Roscoe and Scherlemmer observe:

"Libavius was the first to investigate the properties of zinc more exactly, although he was not aware that the metal was derived from the ore known as calamine. He states that a peculiar kind of tin is found in the East Indies called Calaeum. Some of this was brought to Holland and came into his hands."

The priority of the Hindus is thus also indirectly admitted. As you are aware the two leading works of our Āyurveda are the *Caraka* and the *Suśruta* and both of them belong to remote antiquity. The latter describes at length the method of preparing alkalies and rendering them caustic by the addition of lime. The nice distinction shown between *mṛdu* (mild) and *tīkṣṇa* (caustic) alkali and the direction given for the preservation of caustic alkali in iron vessels are equally scientific and leave very little to improve upon. It is enough to add here that at the present day caustic alkali is imported in iron drums. The chapter on *Kṣarpaka* (preparation of alkalies) in *Suśruta* can well be cited as a proof of the high degree of perfection in scientific pharmacy achieved by the Hindus at an early age. Indeed, M. Berthelot was so much struck with the originality of this process that he goes so far as to suggest that this portion in the *Suśruta* is evidently a recent interpolation inserted into the body of the texts sometime after the Hindus had contact with the European chemists. Now, Cakrapāṇi, whose father was Court Physician to King Nayapāla of the Pāla dynasty of Gauḍa and who thus flourished in the middle of the 11th century, *i.e.*, about the time the battle of Hastings was fought, borrows this portion almost *verbatim* from *Suśruta*. Moreover, in the Pali ethical romance called *Milinda Pañho* there is mention of the cauterisation of bad wounds by means of caustic alkali. The date of this process can thus be traced to about 140 B.C. So there is not the remotest chance of inspiration from the European chemists.

Let me now proceed with some historical evidences of the age of the chemical Tantras to which I referred in my previous lecture. Mādhava in his summary of the *Rasesvara-darsana* (lit. science of mercury) quotes at length from the *Rasa-hṛdaya* of Govinda whom he speaks of as *Bhagavat* and an ancient teacher. Now the qualifying epithets *bhagavat* as also *prācīna* (ancient) are only applied to venerable Ṛṣi-s of old. A contemporary author is never mentioned in such terms of the deepest reverence. It is therefore evident that during the lifetime of Mādhava a halo of antiquity had encircled round the name of Govinda, who must have lived at least four or five centuries before the time of the Prime-Minister of Bukka Rao. In other

words, the latest date we can assign to Govinda is 9th or 10th century A.D. Internal evidence also corroborates the view I have taken. I was so fortunate as to be able to procure 3 MSS. of this rare work - one from the India Office, the other from the Library at Katmandu (Nepal) and another from Benares. The last is 386 years old and is of special historical importance; from its colophon we learn that it was written at the request of the King of the Kirātaland, *i.e.*, the region round about modern Bhotan. Our author says, "Bhikṣu Govinda, well versed in chemical operations and loaded with honours by the King of Kirāta, composed this *Tantra* called *Rasa-hṛdaya*. May Tathāgata (Buddha) pronounce his blessing." The Buddhistic creed of the author is thus revealed. There is a belief current in some parts of the Madras Presidency that our Govinda is no other than the celebrated teacher Śaṅkarācārya and some verses from *Sm̐kara-digvijaya* are cited in support of this view. Apart altogether from the question whether at so early a date the progress of chemical knowledge such as we glean from *Rasa-hṛdaya* had been attained in India, the colophon quoted above would tell against such an hypothesis. We need not seriously discuss whether Śaṅkara, the sturdy champion of Brahminical faith, the mighty dialectician, whose activity was mainly instrumental in sounding the death-knell of Buddhism in India, ever sat at the feet of a Guru of the opposite creed. In 1839 the celebrated Hungarian scholar Csoma de Koros who had spent years in the monasteries of Tibet, created quite a sensation by publishing in the *Asiatic Researches* an analysis of *mDo* or the Sūtra-s from the Tibetan Encyclopaedia, the *bsTan'gyur*. When the Tibetans embraced the faith of Śākyamuni an intellectual craving was created among them and they were eager to remove their mental barrenness by greedily devouring the contents of the literary and scientific works available in North India. Several eminent Pandits of Bengal visited Tibet at the invitation of its king. Some of the most famous amongst them were Śāntarakṣita, high priest of monastery of Nālandā, Padmasambhava and the sage Dipaṅkara Srijnana (Atisa), who later on at the request of King Nayapāla accepted the post of high priest of the monastery of Vikramaśīlā. These scholars took a prominent part in the dissemination of Hindu learning in the Land of Snow. The Sanskrit works were rendered into Tibetan with wonderful fidelity to the original and thus many old Hindu works on literature and science, which at one time were supposed to have been lost, can now be recovered.

In the analysis of Csoma de Koros mention is made of a work on "quicksilver (mercury), the most powerful tonic for subduing every sickness and for improving the vigour of the body" and of another work "on turning base metals into gold."

Chemistry was vigorously pursued in India during the Mahāyāna phase of activity of Buddhism and a fragmentary work of this period on this subject has been recovered entitled *Rasa-ratnākara* and ascribed to Nāgārjuna. From this priceless treatise we can glean much valuable information about the progress of Chemistry in India before the Muhammadan invasion of North India. I have no time to pursue here the chronological sequence of the various chemical works available now. It will suffice to state the colleges attached to the monasteries of Nālandā, Vikramaśīlā, Udandapur, etc., and which sometimes contained as many as 10,000 students, were recognised seats of learning and Chemistry was included in the curriculum of studies. The last two monasteries were destroyed by Bakhtiyar Khilji and his hordes, and most of the monks thereof put to the sword, only a few managing to escape. The learned Śākyasri fled to Orissa and afterwards to Tibet, Ratnaraksita to Nepal and Buddhāmṛta and others sought asylum in South India. Many emigrants from Magadha rejoined their brethren in the

South and founded colleges on a moderate scale in Vijayanagar, Kalinga and Konkan. It will thus be noted that the scholarly monks of the above monasteries, on their dispersion bore with them their learning in the same manner as the Byzantine Greeks on their expulsion from Constantinople carried with them their intellectual treasures to the Italian cities. In the kingdoms of the Deccan and in Tibet the Buddhist refugees found hospitable asylums just as the Greek scholars did in the Florentine Republic under the Medicis. We have thus a ready explanation of the apparent puzzle as to why Tibet and Vijayanagara - the two kingdoms which were cut off and isolated from the external world - should boast of works on Chemistry - as to why Mādhavācārya should be in a position to quote from these standard authors. Again, if Chemistry were the only branch of science pursued in ancient India a *prima facie* case could be made out that its origin lay outside it and that it was borrowed by the Hindus; but the capacity of a nation must be judged by what it has independently achieved in the several fields of knowledge and branches of Literature, Mathematics, including Arithmetic and Algebra, Geometry and Astronomy; Phonetics, Philology, Grammar, Law, Philosophy and Theology.

Cantor, the historian of Mathematics, was so much struck with the resemblance between Greek Geometry and the Śulva Sūtra- that he, as is natural to a European, concluded that they were influenced by the Alexandrian School of Hero (215 B.C.). The Śulva Sūtra-s, however, date from about the 8th century B.C. And Dr. Thibaut has shown that the Geometrical theorem of the 47th proposition, Book I, which tradition ascribes to Pythagoras, was solved by the Hindus at least two centuries earlier, thus confirming the conclusion of V. Schroeder that the Greek philosopher owed his inspiration to India. Nor must we forget that the most scientific grammar that the world has ever produced, with its alphabet based on thoroughly phonetic principles, was composed in India about the 7th or 8th century B.C. As Professor Macdonell remarks, "We, Europeans 2,800 years later, and in a scientific age, still employ an alphabet which is not only inadequate to represent all the sound of our language but even preserve the random order in which vowels and consonants are jumbled up as they were in the Greek adaptation of the primitive Semitic arrangement of 3,000 years ago." Nor is it necessary to point out here that the decimal notation was familiar to the Hindus when the *Vyāsa Bhāṣya* was written, *i.e.*, centuries before the first appearance of the notation in the writings of the Arabs or their Greco-Syrian intermediaries.

I began by quoting the opinions of two Orientalists, namely, Burnell and Barth, both of whom were evidently under the impression that the Chemistry of the Hindus had its origin during their intercourse with the Arabs. Before I conclude let me cite the authority of another Sanskrit scholar, who also hints as much. Thus, Aufrecht in his monumental *Catalogus Catalogorum* (Catalogue of Catalogues) while noticing the MSS. of Rasaratna-samuccaya goes somewhat out of his way in asserting that the 27 chemists to whom invocation is made in the opening lines are mostly apocryphal. From what I have said above, it will be abundantly clear that these chemists, far from being mythical, existed in real flesh and blood and that Govinda, Nāgārjuna, Yaśodhara and others included in the list have left imperishable records of their attainments in their works, some of which are fortunately extant.

Gentlemen, one word more and I have done; it is of a personal nature and I hope you will forgive me for referring to it. I confess, as a Hindu, the subject of Hindu Chemistry has always had a fascination for me. But there is another valid reason as to why I threw myself heart and soul into the task of recovering the precious gems bequeathed by our chemical ancestors.

It is to an illustrious roll of European scholars beginning with Sir William Jones, Colebrooke, Prinsep, Lassen, Burnoff and Csoma de Kores that we are mainly indebted for bringing to light and giving prominence to, the priceless treasures embedded in Sanskrit, Pali and Tibetan literature. Hindu Chemistry, however, waited long and patiently for an interpreter. I thought I owed a debt to the great nation to which I am proud to belong. Hence it is that I felt it incumbent upon me to dedicate some of the best years of my life to this self-imposed task with what success it is not for me to say. We have no reason to be ashamed of the contributions of the ancient Indians to the science of Chemistry. On the contrary, considering the time and age in which they flourished I am justly proud of them. I implore you to take to its pursuit and I hope that you will justify by your work that you are no unworthy successors of your glorious forefathers in the world of learning. P A S

Science and Freedom

D. D. Kosambi

In 1949, I saw that American scientists and intellectuals were greatly worried about the question of scientific freedom, meaning thereby freedom for the scientist to do what he liked while being paid by big business, war departments, or universities whose funds tended to come more and more from one or the other source. These gentlemen, living in a society where he who pays the piper insists upon calling the tune, did not seem to realize that science was no longer 'independent' as in the days when modern machine production was still expanding at the lower stage of technical development, and the scientist who made the most essential discoveries was looked upon as a harmless individual toying with bits of wire, chemicals, perhaps collecting odd specimens in out of the many places. The scientist now is part of a far more closely integrated, tightly exploited, social system; he lives much more comfortably than Faraday, but at the same time under the necessity of producing regular output of patentable or advertising value, while avoiding all dangerous social or philosophical ideas. As a result, the worthies I mention were quite worried about the lack of scientific freedom in a planned society, but only indirectly and perhaps subconsciously as to what was actually happening to their own freedom in an age and time of extensive witch-hunting, where being called a communist was far more dangerous than being caught redhanded in a fraud or robbery.

These considerations, however, are mentioned only because they lead one astray from the main facts. There is an intimate connection between science and freedom, the individual freedom of the scientist being only a small corollary. *Freedom is the recognition of necessity; science is the cognition of necessity.* The first is the classical Marxist definition of freedom, to which I have added my own definition of science. Let us look closer into the implications.

As an illustration, consider the simple idea of flying. I am told that our ancestors in India had mastered some mysterious secrets of *yoga* whereby they could fly hundreds of miles in an instant. I don't believe it; these are flights of the fancy rather than of the body. Attempts to imitate the birds had very limited success, but gliders were more successful. Then came the posing of the elements of the problem, namely sources of power, methods of propulsion, laws of aerodynamics - all scientific and experimental truths. Mankind was not free to fly till

the flying machine was invented. Today, anyone can fly without *yoga*-provided he has the means to enter an airplane. This, as society and its property relations are constituted, implies that either he owns the plane, or someone who does allows him admission; ultimately, the question is whether or not our flying human has money, i.e. the necessary control over means of production. In the abstract nothing prevents him from sprouting a pair of wings and flying off like a bird; nor from becoming a yogi and soaring into the atmosphere by mere exercise of will-power. Such freedom nevertheless, are illusory; necessity compels man to find other, more feasible technical methods.

Take a commoner case, of eyesight. Five hundred years ago, extreme short sight or extreme farsight would have been regarded as varieties of blindness; they were written off as afflictions from heaven, or concomitants of old age. Glasses have to be invented for the restoration to normal sight of such people. This means today the science of optics, some knowledge of eyestructure, of glass, including its chemistry, lens-grinding technique, factories, and workshops. There are still many people who suffer from eye-defects that could easily be corrected by glasses; they are legally free to wear glasses. Only lack of funds prevents them. In India the number of pairs of glasses really necessary but not available would run into the millions.

We observe, then, that to recognize the necessity implies scientific experiment; in addition, there is a technical level which cannot be divorced from the experimental. Finally, there is a social structure that is not only intimately connected with the technical level, but also conditions the freedom of the individual by introducing a social necessity that in the abstract seems unnecessary but exists nevertheless.

Some of my experiments about science are not likely to be disputed; that Science knows only one test, that of validity, of material proof. Science is nothing if it does not work in practice. Science is direct investigation of properties of matter, hence materialistic. Scientific results are independent of the individual who carries out the experiment, in the sense that the same action gives identical results. Finally, as the search for causes and their effects, science is cumulative; *science is the history of science*. Every scientific discovery of any importance is absorbed into the body of human scientific knowledge, to be used thereafter. Schoolboys can repeat Galileo's experiments, and first year college students learn more mathematics than Newton knew; the young students must go through much the same mental process, stripped of its essentials and repeated according to modern points of view, when they study. But they do not have to read Galileo's dialogues, nor the *Principia*. Here science differs essentially from the arts, for in painting, the modern painter need not study the prehistoric bison in the cave of Altamira, nor the poet read Kalidasa. On the other hand, we can appreciate works of art and literature of all ages, for they are not subsumed in their successors in the manner of scientific discovery. Aesthetically, they have a survival value, a lack of obsolescence that the scientific work lacks. However, not all aesthetic effects have this survival value; the rapidly changing fashions that most ruling classes think necessary in their garments become as quickly ridiculous.

The other statements may also be briefly illustrated. Two painters painting the same scene will produce substantially different pictures; two people clicking the shutter of the same camera pointed at the same object will not. The fruits of ritual depend upon the rank of the celebrant, and only the king, medicine-man, shaman, or brahmin have the power or the right

to draw down certain benefits for mankind; science tells us that these supposed benefits are imaginary, and fertility of the soil is better obtained by special agrotechniques, chemical fertilizers, and so on, than by fertility rites. Moreover, the chemicals and techniques work in the same way independently of who applies them.

Now I give these examples deliberately, because both art and ritual performed at one time the functions that have been displaced by scientific observation. Primitive ritual was a substitute for what we now call scientific theory though primitive technique was correct. In India the menstrual tabu is still observed, though dying out in the cities, where the hurly-burly of industrial life deprived it of all meaning. Our workmen worship their tools on one day in the year, a custom not without charm which can be traced back to the oldest known times; but lathes, turbines, electric motors and railway trains have made it clear that there is none of the workman's personal *mana* that resides in the tool. I note in the market that the humble vegetable vendor makes the first sale of the day with a humble salutation to the balances, and to the goddess Bhavani; the sharemarket speculator may spend considerable sums on astrologers, but doesn't neglect the market quotations, and relies upon study of trends and corners in shares, stocks, bonds, and such modern financial jugglery which is absent in his and the astrologer's scriptures. The millions that bathe even now at the time of a solar eclipse can point with pride to the fact that their prayers have been successful, that the sun has always been freed from the maw of the demon who swallows him; but astronomical theory which predicts the eclipse to the minute has crept into our traditional *pancanga* almanacs, through the Western ephemerides, so that people cannot really believe in what has come to be an obsolete practice. *In science, practice and theory cannot be divorced*. This does not mean that scientists have never held a wrong theory, but only that they keep on making better and better approximations to the truth, knowing that there is no final truth simply because the properties of matter are infinite and inexhaustible. In ritual, no one dares make an experiment; the older the precept the more sure its grip.

Religion develops from ritual when primitive society acquires a class structure, a tighter organisation of its originally varied components into a larger whole. This need not be elaborated here. What most of us do not realize is that science is also a social development; that the scientific method is not eternal and that *science came into being only when the new class structure of society made it necessary*. Of course, science really comes into its own with the machine age, which cannot develop without science and which in turn contributes highly useful technical aid to scientific discovery. But the fundamental inner connection is that machine production, like science, is cumulative. The machine accumulates human labour time towards the fulfilment of a specific human purpose. Yet modern science, as we know it, came into being before the machine age, and for the same purpose, namely to serve the new social needs. *Modern science is the creation of the bourgeoisie*.

One of the major contributions of science is that it separates theory from technique, specifically from productive technique. If you look at our village workmen, you find them still producing excellent work with quite inferior tools simply because the workman masters the individual tool, makes it an extension of his person. Only he can handle the particular bit of metal efficiently enough to obtain good results. But his production is not standardized. If he makes two complicated devices of the same type, the parts will not be interchangeable, though both may have the same design and function. In the modern factory, on the other hand,

the lathe or the loom is independent of the person handling it, just as the scientific experiment is independent of the experimenter, provided in each case the worker has the minimum efficiency necessary to keep the mechanism from damage. A village weaver is whole ages and social layers apart from the village potter; a worker on the assembly line can easily shift from one type of factory to another. In the case of the handicrafts-man, theory is not divorced from the tool, his knowledge is acquired as well as expressed through his fingers. The result is that the transmission of such knowledge is slow, craft workers tend to form into closed guilds (in India small sub-castes), and a long apprenticeship is necessary for the production of more workmen, their numbers and production being severely limited. This was the situation in Renaissance Europe, for example, when considerable accumulation of money with the merchant princes (and its overflow) made it necessary to find new methods of making money grow. The older usury was limited in scope: more than a certain profit could not be extracted from the debtors tied to the older mode of production. Confiscating the mortgaged tools of a craftsman may lead to starvation for him and his family but the tools are unproductive bits of metal and wood to the usurers. There is needed a new class which can produce goods efficiently without long training, and whose surplus labour can be appropriated by an employer. This turns the mere usurer into a capitalist, the craftsman into a proletarian. But to manage such enterprises, there is needed some theory of material processes that works in practice, and serves the managing class which does not handle the tools of production. This is precisely the role of science. If you look into Galileo's researches, for example, you will find them concerned with such practical things as why pumps don't suck up water above a certain height — which leads to hydrostatics, and also to better pumps. Accurate time-keeping is made possible by his observations upon the pendulum; but it is factory production, where many men have to be brought together simultaneously for coordinated labour, that needs accurate time-keeping; not cottage industries. Galileo cast or recast horoscopes, rather badly. His astronomy was revolutionary because he turned a telescope upon the heavens, to interpret what he saw in a perfectly natural manner. The man in the moon disappeared, to be replaced by mountains. But what made his astronomy dangerous was the fact that it shook a system of the universe taken for granted by the ruling class and by the church that served it; by implication, the rest of the social system was also laid open to challenge, something that no man is free to do without risk.

Science is not mere accumulation of experimental data. No experiment is great unless it settles some disputed theory; no theory is a striking advance unless it explains puzzling experimental data, or forecasts the results of unperformed experiments. But one has only to look at the way the scientific centre of Europe has shifted to see the intimate connection between science and production, between the coming to power of a new bourgeoisie and the local age of discovery. Leeuwenhoek was a janitor in Delft who ground his own lenses and made the first good microscopes, which he turned upon drops of water and the smallest insects. It was the Royal society of London that sent its secretary to visit him, and published his papers, just as they published Redi's communications against the doctrine of spontaneous generation, which helped solve the very practical problem of food storage. But the idea of giving credit to him who publishes first is comparatively new. Even Newton did not like to give away his discoveries light-heartedly, and the further back we go the stronger we find the tendency to keep a precious secret concealed as a monopoly. It is the social mode of

production that changes the fashion, though private ownership of the means still insists upon patents, cartels, monopolies at level of technique and manufacture. Now is it an accident that the very century during which two revolutions placed the bourgeoisie in power in England produced Newton? How is it that the French revolution, which cleared off the rubbish of feudalism in France saw the greatest of French and European scientists: Lagrange, Laplace, Ampere, Berthelot? They rose with the bourgeoisie and survived Napoleon. Gauss, the great name in German science, appears on the scene at about the time the German bourgeoisie becomes the real power in its own country; and he is not alone. If we wrote all these off as accidents, we should be in the ridiculous position of science, by taking the history of science as a series of fortunate coincidences, though science is its own history and has always progressed by seeking the reason behind suspicious coincidences. I might go further and say that Greek science was (in spite of all the admiration lavished upon it, and in spite of its logical method having served as inspiration to the Renaissance) not science in the modern sense at all, but pseudo-science, much as Greek and Roman capital can at best be called pseudo-capital in spite of modern imperialist tendencies and actions. The aim of Greek science was to reduce all phenomena to reasoning from the techniques that had originated the very discoveries. That too was a social necessity, for in classical society the work was done by slaves, whose existence was taken as a law of nature, a necessity which reflected itself in the scientific outlook of the time.

This should dispose of idea that science is the creation of gifted individuals, thinking for 'purely' scientific purposes along problems which came to them out of some realm of the mind. There are gifted individuals in every age and society, but the manner in which they exercise their gifts depends upon the environment, just as much as the language in which they choose to do their thinking. It is as impossible for the mind to exist without thought as for the body to exist without motion. There are still people in India who speculate upon the relative merits of Sankara's and Ramanuja's philosophy, though they do not thereby presume to acquire the prominence of those two founders. If I repeat Newton's experiment with the prism, I shall get the same results, but certainly not the same credit as a scientist or founder of optics. *The weight, the significance of a scientific discovery depends solely upon its importance to society.* This is why the college student, knowing more mathematics than all of Newton's contemporaries, is still not a prodigy. A discovery that has been assimilated is reduced to the level of useful technique. A discovery made before it is socially necessary gains no weight and social necessity is often dependent for its recognition upon the class in power. Leonardo da Vinci, whose 500th anniversary is now being celebrated, is the most famous example of this. He still served feudal masters, who were not interested, for example, in the manufacture of pins (from which Leonardo expected to make a fortune), and who used his mechanical talents for stage effects. A hundred years later, his fame as an artist would have been far less than an inventor. That social development, both in technique and in needs of production, evoked scientific discovery long before the days of organized research is clear from the independent and simultaneous discoveries made so often in the history of science. For example, the liquefaction of gases, so long considered an impossibility, was done by two different people in France at once. The Raman effect, whose theory is still imperfect, was discovered simultaneously in the USSR and India. The credit rightly belongs to Raman, who realized at once that while the rest of the world had been looking for an atomic effect, this was a

molecular phenomenon. The experiments he devised proved it, and gave us a valuable technique of analysis which does not change the substance.

But occasionally, as with Priestley, the conflict between the scientist and the class that dominates society becomes too great for the individual and for his discoveries to gain proper recognition. This is not a characteristic merely of the bourgeois period. During the middle ages, we find Europeans turning to meditation, the monastic life, theological speculation. Such tendencies were highly respected and advertised, with the assistance of an occasional miracle. However, the theology was not independent of the class structure of contemporary society; dangerous speculations led a man to the stake. Not only feudal rulers, but the later merchant classes used theology, protestantism in the latter case. The early saints and martyrs upon whose reputation the church was apparently founded, did not suffice in the later period. When the Church itself became a great holder of feudal property, abbeys and bishoprics turned into the prerogatives of particular rich families, or groups of families; this happened, incidentally even with Buddhism as may be seen from the history of the Barmecides, or of the few ruling families of Tibet till its recent liberation, or from the history of the richer monasteries in Ceylon. The foundations of Sankara, Ramanuja, and even a real people's saint like Tukarama are now chiefly preoccupied with methods of increasing their wealth, retaining out worn prerogatives, avoiding taxes. The wealthy Church in Europe needed the Inquisition to support its claims; that holy office found Galileo's thought dangerous. The crusades were diverted to strange aims, such as the conquest of Constantinople, and the suppression of a popular movement in the Albigeois. The Index Expurgatorius shows the church's attitude towards certain type of advanced thinking, while the last Spanish civil conflict demonstrated what steps the church in Spain, as Spain's greatest owner of property, was capable of taking against a democratic government.

A fairly close parallel could be drawn on the thesis that *science is the theology of the bourgeoisie*; at least it replaces theology whenever the bourgeoisie-capitalist mode of production displaces the feudal. The scientist must remain comparatively poor like the monk, but is admired, admitted to the board of the capitalist baron just as the cleric was to that of the feudal lord. His discoveries must be patentable, but he rarely makes the millions; Pasteur and Faraday received a beggarly pittance of the profit made from their discoveries. A press-agent may make the scientist's miracles known, but only if they are acceptable to the lord of the press, hence to the ruling class. And most striking of all, in the period of decay, witch-hunting is as prominent in its own way as with the end of feudalism.

Though a creation of the bourgeoisie, science is not its monopoly, and need not decay with the bourgeoisie. The art of dancing began as part of ritual, but is now one of society's aesthetic pleasures even though the witch-doctors who initiated it have mostly vanished. Music is no longer necessary to promote the growth of plants; even as I write, I can hear the primitive rhythm of tomtoms and ancient chants being practised at midnight—not for better crops but for the sake of some relief from the daily grind of life by people who are milkmen, factory workers, and house-servants. Sculpture does not mean the underground mysteries of pre-historic French grottos; the Parthenon statuary is admired in the British, but no longer worshipped. There is no reason for science to remain bound any longer to the decaying class that brought it into existence four centuries ago. The scientist needs this freedom most of all, namely freedom from servitude to a particular class. Only in science *planned* for the benefit

of all mankind, not for bacteriological, atomic, psychological or other mass warfare can the scientist be really free. He belongs to the forefront of that great tradition by which mankind raised itself above the beasts, first gathering and storing, then growing its own food; finding sources of energy outside its muscular efforts in the taming of fire, harnessing animals, wind, water, electricity, and the atomic nucleus. But if he serves the class that grows food scientifically and then dumps it in the ocean while millions starve all over the world, if he believes that the world is over-populated and the atom-bomb a blessing that will perpetuate his own comfort, he is moving in a retrograde orbit, on a level no beast could achieve, a level below that of a tribal witch-doctor.

After all, how does science analyse necessity? The sciences are usually divided into the exact and the descriptive, according to their being based upon a mathematical theory or not. This distinction has faded away because the biological sciences have begun to feel the need for exact numerical prediction, while physics and chemistry have discovered that, on the level of the individual particle, exact prediction is not possible as with the movement of the solar system. Both have found the new mathematical technique, based upon the theory of probability that they need. In the final analysis, science acts by changing its scene of activity. It may be objected that astronomy does not change the planets or the stars; is it not purely a science of observation? Astronomy first became a science by observing the changes in the position of heavenly bodies. Further progress was changed by being gathered into telescopes, broken up by passage through spectrographs, or twisted by polarimeters. Parallel observations of changes, say in metallic vapours, in the laboratory enabled conclusions to be drawn about the internal constitution of the stars. There is no science without change.

If this be admitted, we are near the end of the inquiry. The reason why the scientist in a capitalist society to-day feels hemmed in and confined is that the class he serves fears the consequences of change such as has already taken place over a great part of the world's surface. The question of the desirability of such change cannot be discussed dispassionately, cannot be approached in a scientific manner, by the supposedly 'free' scientist. The only test would be to see the two systems in peaceful competition, to see which one collapses of its own weight, succumbs to its own internal contradictions. But the scientist who says that this should be done finds himself without a job if he is on the wrong side of the "iron curtain." The real task is to change society, to turn the light of scientific inquiry upon the foundations of social structure. Are classes necessary, and in particular, what is the necessity for the bourgeoisie now? But it is precisely from cognition of this great problem of the day that the scientist is barred if a small class should happen to rule his country. Perhaps the crisis cannot be considered immediate in new class? This is incorrect. The new class did not develop its own science any more than it invented its own Indian steam engine and motor car. Just as they import the best paying machinery, the science they need is also imported in ready-made form. They are also ready to import any political ideology that serves their end. This means that instead of the centuries of development from medieval to modern as in Europe we can expect at best decades in India, under the leadership of a bourgeois-capitalist class that has only re-oriented but not lost its colonial mentality.

Snake – Bite : Some Observations

Dr. Nirmalendu Nath

Birth and death are two vital events in human life. The first one is a pleasant one while the second one brings sorrow to the family. This deep mental distressful affair becomes more pathetic if the death of the dear one is effected by snake-bite. There exist various superstitions about snakes and snake-bite patients among the rural people. The rural people still now believe that the presence of venom in the human body due to snake-bite could be eliminated by the exorcist (Ojhas) or by the application of a sucker-stone generally known as 'venom stone' in the wounded part of the body. A section of the rural people even believe, the human body (dead) caused by a poisonous snake may be reanimated if the body after being floated in the river is able to draw attention of a master exorcist. Canning Juktibadi and Sanskritick Sanstha (CJSS) estimated that only in 4 blocks of South 24 Parganas, the number of deaths between 1993- 2002 due to snake - bite was around 349 and most of the deaths occurred due to high dependence on quacks and exorcist.

In order to abolish these prevailing superstitions from the mental frame of rural people CJSS for the last 20 years has been organizing various programme in various blocks of South 24 Parganas. So far, three different but related programmes have been adopted by CJSS. First, estimation of the number of deaths caused by snake-bite in these snake-bite prone district. Second, adoption of sustained awareness campaign about snake and treatment of snake-bite patients in the district. Third, inauguration of 'Help-Line' on 'Snake-bite' with a wider coverage of South Bengal. The estimation of the number of deaths caused by snake-bite was done by CJSS through an epidemiological household survey covering the eight snake-bite prone blocks of South 24 Parganas. This estimation was done for the period 2006-2009. Initially the awareness campaign about snakes and snake-bite patients was done at almost all important markets, ferryghats, fairs, schools etc., of South 24 Parganas. With the financial assistance from National Rural Health Mission (NRHM) in January, 2008, this campaign was organized at the village level more particularly, at the 'Gram Sansad' level. Apart from these 'household level' and 'gram sansad' level activity from March 2010, CJSS extended free medical advice for snake-bite patients through 'Help-Line' centered at Canning. In the following pages, after a brief description of the socio-economic condition of the eight selected blocks, we try to evaluate the results of these different but related programmes.

The District and Selected Blocks

The district of South 24 Parganas came into existence on March 1, 1986. Presently there are five subdivisions Alipore (Sadar), Baruipur, Canning, Diamond Harbour and Canning, 29 blocks consisting of 312 Gram Panchayas and 7 Municipalities. South 24 Parganas is, indeed, a complex district, stretching from the metropolitan Kolkata to the remote riverine villages in the south up to the north of Bay of Bengal.

The eight selected blocks of the district under survey are Gosaba, Basanti, Joynagar-II, Kultali, Mathurapur-II, Pathar Pratima, Sagar and Namkhana. All these blocks belong to the

southern part of the Dampier-Hendeges line. The southern part of the Dampier-Hendeges line consists of 13 blocks of South 24 Parganas and is commonly known as Sundarban. The northern part of the Sundarban have been settled long ago, the settlements in the southern part are of recent origin. The settlement in the south are more dispersed than those in the north.

The eight blocks under survey can be categorized into two regions. Some of them are now parts of the mainland which is connected by roads and having other infrastructural facilities typical of their rural counterparts in India. Under the South 24 Parganas, the areas under the administrative blocks of Joynagar-II, Mathurapur-II, Namkhana, fall almost entirely in this category. The people living in these areas are not in close proximity with the forest. But the blocks of Basanti, Gosaba, Kultali, Patharpratima and Sagar, together accounting for about 40 per cent of the total area of the district call for a special understanding of the people, their threat perceptions. They are almost entirely detached from the mainland and live under much different conditions unmatched in the rest of India. These are people living in islands on the fringes of Reserve Forest. The islands often face the forest on the other side of the separating river. The settlers initially lived mostly on agriculture with some viable amount of reclaimed cultivable land for each household.

The five island-blocks around forest boundary is featured by the co-existence of human settlement and reserved forest. Given a moderate density of population approximately 700 per Sq. Km. and low - lying nature of the area infested with various species of snakes, the incidence of snake bites is traditionally high in these blocks. Snake bite is a common problem in these areas and results in death in many cases.

According to Census 2001, the total population of South 24 Parganas is 6906689. In 2001, 25.06 per cent of the total population of the district and 61.95 per cent of total population of the Sunderban region are living in these 8 selected blocks. The socio-economic condition of the people living in these 8 blocks is described with the help of four parameters; a) female literacy rate, b) percentage of the small and marginal farmer household and agricultural labourer household, c) the percentage of household living below the poverty line and d) human development index. The value of the four parameters with respect to eight blocks are presented in Table -1.

Table 1: Socio-economic profile of selected blocks

Block	Density of Population	Female Literacy Rate	B.P.L. Household %	Small Marginal & Landless Household in %	Human Development Index	Rank (Among 29 block in the district)
Island Block						
Gosaba	7 51	56.60	38.02	76.60	0.54	27
Basanti	689	44.30	64.59	80.36	0.50	29
Kultali	614	44.60	46.36	70.21	0.59	18
Patharpratima	595	60.60	49.15	56.67	0.56	23
Sagar	658	67.10	44.46	60.23	0.55	24
Non-Island Block						
Joynagar-II	1123	45.40	43.62	82.92	0.55	25
Mathurapur-II	872	54.90	39.59	79.59	0.59	17
Namkhana	433	67.60	48.17	58.47	0.58	19

Source : Census of India 2001, Rural Household survey 2005, HDR South 24 Parganas 2009, Health on the March 2008.

A glance at the Table-1 reveals that highest female literacy rate is observed at Namkhana the percentage being 67.60. The lowest female literacy rate i.e., 44.30 per cent is observed at Basanti. Basanti is also featured by the presence of highest percentage of families living below the poverty line. At Basanti the percentage of rural households living below the poverty line is 64.89 per cent. Basanti is thus, characterized by the presence of highest level of illiteracy among women along with highest number of rural households living below the poverty line. The human development index (HDI) of the block Basanti is 0.50, indicating the lowest level of human development among the 29 blocks of South 24 Parganas. The value of HDI for all these blocks varies between 0.50 and 0.59 indicating a low human development. In other words the standard of living of these eight blocks is at a low order (Table-1).

A low level of HDI i.e. a higher level of illiteracy generates superstition. Illiteracy along with poverty reinforces the foundation of superstition. As a result of this superstition rural people of these areas depends to a great extent on the exorcist for treatment of snake-bite victims. In some cases, the people hesitate to report about the snake bite incidents. Consequently, a large number of snake-bite cases remain unrecorded. As mentioned in HDR - South 24 Parganas, 2009 there have been 8 reported deaths from snake bite between Jan - June 2007, compared to 15 in 2006. However CJSS estimated deaths from snake-bite was 21 and 61 respectively for the year 2006 and 2007. In order to trace the extent of these unrecorded event i.e. snake-bite patient and snake-bite victims a survey was organized by CJSS in these eight selected blocks of South 24 Parganas.

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The Survey

The survey was conducted in two phases. In phase-I of the survey only two blocks, Gosaba and Basanti were taken into consideration. After the completion of the survey in Gosaba and Basanti, remaining six blocks such as Kultali, Joynagar-II, Mathurapur-II, Patharpratima, Sagar and Namkhana were taken into consideration. Started in January 2008, a total of 22 months was required to complete the survey. Due to financial constraint and administrative reasons the period of survey was prolonged. It was decided that the survey will be one of household survey. The enumerators were asked to visit each household of the 'gram sansad' and collect information relating to snake-bite, if any, occurred in the family during the past two years through a structured questionnaires.

The information on snake-bite collected for the period 2006 to 2009 will now be analyzed on the following major points; a) the extent of the occurrence rate, i.e., the number of snake-bite cases per ten thousand population per year in these 8 blocks, b) determination of the mortality rate due to poisonous snake-bite i.e., number of deaths occurred per thousand snake-bite cases per year, c) age-wise variation of this death, d) seasonal variation in the death of snake-bite cases, e) type of species (snake) that effected such death and lastly f) current practice of treatment of snake-bite patients.

Table -2 described the number of deaths from snake-bite fro the period 2006 and 2009 as captured in the survey. The total number of deaths from snake-bite in these eight blocks was

184. The highest number of deaths was observed in 2007, the deaths being 61. Thereafter number of deaths decreases. In 2009, the number of deaths from snake bite was 42. The highest number of death in any year in a block was observed at Gosaba. In 2007, 17 cases were found to be snake-bite victims at Gosaba. As against this in Sagar, the number of death was as low as 10 between 2006 and 2009.

Table 2: Number of Deaths Due to Snake Bite between 2006-09

Block	Year 2006	Year 2007	Year 2008	Year 2009	Total
Island Block					
Gosaba	7	17	n a	n a	24
Basanti	12	11	n a	n a	23
Kultali	n a	8	15	15	38
Patharpratima	n a	5	12	11	28
Sagar	n a	2	4	4	10
Non-Island Block					
Joynagar-II	2	6	11	3	22
Mathurapur-II	n a	9	15	4	28
Namkhana	n a	3	3	5	11
Total	21	61	60	42	184

Source : Field Survey 2009

The number of snake-bite cases per ten thousand population per year i.e. occurrence rate and the number of deaths occurred per thousand snake-bite cases per year i.e., mortality rate in these eight blocks of South 24 Parganas are presented in Table -3. The data indicate that there had been 184 deaths out of 4871 reported cases of snake-bite between 2006 and 2009. The survey data on snake-bite shows average occurrence per ten thousand populations was 13.95. However, the average case fatality ratio i.e. mortality ratio was as high as 37.77 per cent. Interestingly, the same mortality ratio was observed by other researchers. In 1992 Dr. Amiyo Hati and others observed the same mortality ratio of snake-bite with respect to Burdwan. In some blocks the mortality rate was significantly high. The incidence of death from snake-bite per thousand at Mathurapur-II was as high as 61.18, while the lowest incidence of death was recorded at Basanti. The rate was only 23.58. The important point to be noted here is the prevalence of high mortality ratio (case fatality ratio) with a low occurrence rate. In Mathurapur -II death from snake-bite was considerably higher in comparison to other blocks. Lack of awareness, improper housing standard might be the causes of increased morbidity.

Table 3 : Occurance rate and mortality rate of Snake Bite

Block	Number of Person Bitten	No. of Death	Average Number of Person Bitten per year	Average Number of Deaths per year	Estimated Population 2009	Occurance Rate in per cent	Mortality Rate in per cent
Island Block							
Gosaba	885	24	442.5	12.5	232874	18.60	28.24
Basanti	975	23	487.5	11.5	318453	15.30	23.58
Kultali	714	38	370.5	19.0	211507	17.52	51.28
Patharpratima	590	28	295.0	14.0	319635	9.23	47.40
Sagar	280	10	140.0	5.0	209516	6.68	35.71

Non-Island	Block						
Joynagar-II	515	22	257.5	11.0	232660	11.06	42.72
Mathurapur-II	474	28	237.0	14.5	216310	10.96	61.18
Namkhana	411	11	205.5	5.5	193884	10.59	26.76
Total	4871	184			1744845	13.95	37.77

Source : Field Survey 2009, Census 2001

Geographically, the area under the survey is confronted with specific health problems such as arsenic contamination, vector borne diseases (like Kala-azar, Malaria, Filariasis) and diseases spread through food and water (like diarrhoea). The high incidence of snake-bite as revealed by the survey also requires proper attention. The information given in HDR - South 24 Parganas 2009 indicate that in 2006 the total number of deaths from all vector borne diseases and diseases spread through food and water was 62, while in 2007 the total number of fatality, due to snake-bite as observed during the survey in these eight blocks only was as high as 61. Clearly, the importance of snake-bite death in these region is quite evident from the above data.

The age specific distribution of snake-bite victims will now be discussed. As we gather from Table-4, there were 29 persons whose age group is between 15 years and 19 years. Out of 184 victims, 25 victims belong to age group 10 years to 14 years. In fact, there were 88 persons whose age is below 20 years. In other words, out of 184 snake-bite victims in these eight blocks, 47.83 per cent were below 20 years of age. It should be noted here that the highest incidence of mortality rate within the age group 20 was 82.14 per cent. The survey revealed that at Patharpratima out of 28 snake-bite victims the age of 23 persons is 20 years. Most of these deaths occur due to improper treatment.

Table 4 : Age Distribution of Snake Bite Victims

Block	Age in years	01-04	05-09	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60+	Total
Island	Block														
Gosaba		1	-	1	2	1	4	1	4	2	2	5	-	1	24
Basanti		2	3	3	6	2	1	-	1	1	-	1	3	-	23
Kultali		3	3	5	7	2	4	2	1	4	3	1	1	2	38
Patharpratima		1	8	11	3	2	-	-	-	-	-	1	2	-	28
Sagar		-	1	-	3	2	-	-	-	1	-	-	3	-	10
Non-Island	Block														
Joynagar-II		-	2	2	3	3	1	4	1	1	2	3	-	-	22
Mathurapur-II		6	2	1	3	1	2	2	2	2	1	1	2	3	28
Namkhana		-	2	2	2	-	-	-	-	2	-	3	-	-	11
Total		13	21	25	29	13	12	9	9	13	8	15	11	6	184

Source : Ibid

One important feature of the snake-bite cases / victim in these eight blocks is that large majority of victims occurred between June and September. The data presented in the Table - 5 indicates that out of 184 victims, 73.37 persons lost their life due to poisonous snake-bite between June and September. The data collected during the survey on snake-bite victims reflects a high degree of seasonal variation on the snake-bite cases. It gradually increases

between January and August, thereafter decreases. This unique pattern of death due to poisonous snake bite is quite consistent with the life-cycle of snake.

Table 5 : Seasonal Variation of Snake Bite Victims

Block	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Island													
Gosaba	-	2	2	2	1	4	3	2	6	-	2	-	24
Basanti	-	-	1	2	1	6	4	4	5	-	-	-	23
Kultali	1	1	-	3	5	6	6	7	6	2	1	-	38
Patharpratima	-	-	-	2	1	-	1	9	9	4	2	-	28
Sagar	-	-	-	-	-	1	1	1	5	1	1	-	10
Non-Island													
Joynagar-II	-	-	-	-	-	2	-	15	3	1	1	-	22
Mathurapur-II	-	-	1	-	2	5	2	5	10	2	-	1	28
Namkhana	-	-	1	-	-	-	1	3	3	1	2	-	11
Total	1	3	5	9	10	24	18	46	47	11	9	1	184

Source : Ibid

In addition to age specific variation of snake-bite victims, and seasonal variation in the death cases, the survey also tries to detect the particular species of venomous snake which endangered the human life. The four major poisonous snakes in Bengal are Spectacled Cobra, Monocled Cobra, Common Krait and Russell's Viper. Among these four species the first three types are generally found in the Sundarban region. Naturally, most of the people are losing their life by bites from any of these three species i.e., Spectacled Cobra, Monocled Cobra and Common Krait. The study however, indicates an intriguing aspect. The baseline study indicates that those had been 121 deaths due to common krait bite out of 184 total death. (See Table-6). Thus, the case fatality ratio due to common krait bite was highest. The high incidence of death due to common krait is possibly due to night faring nature of this species, unpredictability of bite at the early stage bad housing of village people and gradual extinction of branded Krait a natural predator of Common Krait.

Table 6 : Species of Snake and Deaths

Block	Monocled	Cobra	Common	Krait	Others	Total
Island						
Gosaba		8		16	-	24
Basanti		10		13	-	23
Kultali		14		24	-	38
Patharpratima		7		21	-	28
Sagar		2		8	-	10
Non-Island						
Joynagar-II		6		16	-	22
Mathurapur-II		10		17	1	28
Namkhana		5		6	-	11
Total		62		121	1	184

Source : Ibid

The major public health problems of the eight blocks are water borne diseases, especially diarrhea, frequent out breaks of gastro enteritis. However, the loss of life due to snake bite by venomous snake is also a matter of grave concern. In spite of this treatment for snake-bites is generally done by ojhas. In most of the cases, the affected persons do not rely on medical hospitals. Somebody even depends on quacks. Various types of treatment adopted by the victims relatives / party is demonstrated in Table 7.

Table 7 : Place of Death of Snake Bite Patients

Block	Govt. Hospital	Nursing Home	Ojha to Hospital	On the way to Hospital	At Home	Ojha to Home	Poisonous Stone	On the way	Village Doctor	Total
Island Block										
Gosaba	2	-	3	-	3	16	-	-	-	24
Basanti	2	1	1	-	3	9	7	-	-	23
Kultali	4	-	17	-	7	10	-	-	-	38
Patharpratima	-	2	12	1	1	1	-	-	5	28
Sagar	2	-	2	1	1	1	-	-	-	10
Joynagar-II	-	-	7	-	1	14	-	-	-	22
Mathurapur-II	7	1	12	-	4	3	-	1	-	28
Namkhana	3	-	3	1	3	3	-	-	-	11
Total	26	4	57	3	23	57	7	1	5	184

Source : Field Survey 2009

As we got from Table -7, about 81.52 per cent of 184 total deaths were almost without any treatment. Age old superstition unpredictability of bite at the early stage bad housing, illiteracy are possibly the prime cause.

III

The Awareness Campaign

Our discussion, so far, has concentrated on the extent of snake-bite death cases in eight blocks of South 24 Parganas. We shall now turn on the steps taken by the CJSS to redress this problem. It is already stated that for the past 20 years CJSS has launched various programme such as puppet show, cycle rally, songs, poster, map, exhibition about snake-bite, lack of proper treatment of snake-bite patients in 19 blocks of Sundarban. The organization has also launched a series of programme to impart training to quacks and ojhas how to deal with snake-bite cases. Sensitization programme with the BMOH of South 24 Parganas and East Midnapore had also been organized. In 2008, with financial assistance from National Rural Health Mission (NRHM) a 'sansad' level awareness campaign had been taken.

It was envisaged that a crucial role in this 'sansad' level survey is to be played by a Pradhan of Gram Panchayat. As per 73rd Amendmend of the Constitution, the involvement from the local people in the developmental initiatives is drawn through their participation in public hearings, and meetings. Considering this it was decided that in the evening a public meeting would be held at each gram sansad with the presence of local stake holders. As there were 1130 gram 'sansad' in these 8 blocks, an equal number of 'evening meeting' were held. It was expected that at least one member from each household would attend these meetings. Dividing the actual presence by expected presence we have estimated the average attendance of each meeting. The entire exercise is shown in Table-8.

Table 8 : Attendance Rate at the Sansad Level Meeting

Block	No. of Family (2005)	No. of Sansad (2009)	No. of Family Sansad at per	Average Presence of Meeting Rate at Gram Sansad
Island Block				
Gosaba	52006	170	305	57.37
Basanti	62464	201	310	56.45
Kultali	35424	121	292	59.93
Patharpratima	61272	187	327	53.51
Sagar	37674	116	324	54.01
Non-Island Block				
Joynagar-II	38414	122	614	55.73
Mathurapur-II	30615	115	266	65.78
Namkhana	37768	98	385	45.45
Total		1130		

Source : Field Survey 2009, Rural Household Survey 2005

As per Table-8 the highest attendance was observed at Mathurapur-II, and lowest attendance was at Namkhana. Admittedly, the attempt to educate the poor and illiterate people about snakes and treatment of snake-bite patient through awareness campaign is not totally achieved. It was realized that the campaign should be sustained.

Table 9 : Trend in Hospitalisation

Year	Sadar			Block			Block		
	Canning	Hospital	Death	Gosaba	Hospital	Death	Basanti	Hospital	Death
	Snake bite patient	Poisonous us Snake bite		Snake bite patient	Poisonous us Snake bite		Snake bite patient	Poisonous us Snake bite	
2006	292	22	3	-	-	-	-	-	-
2007	470	47	1	21	9	3	29	11	3
2008	471	52	6	110	11	0	98	61	1
2009	402	44	0	103	6	0	150	68	0

Source : Field Survey 2009

In spite of this indifferent attitude of a section of rural people towards awareness campaign, the number of snake-bite patients coming to the government hospital for proper treatment is rising. The data for the period 2006, to 2009 with respect to Canning (Sadar), Gosaba (Block), and Basanti (Block) hospital clearly depicts this trend. (See Table -9). As we go through the information contained in Table-9, we observe that case-fatality ratio reduces to nil in 2009, at least for the admitted patient in different hospitals.

The Help-Line

In epidemiological survey, research information is gathered through field investigation or field survey. The discussion done in the earlier sections of this report are based on such primary data. On the contrary primary data of this section is culled from the register book of 'Help-line' on snake-bite. It is already stated that from March 2010, CJSS extended free medical advice for snake-bite patients through Help-line centered at Canning. It was decided that vital information contained in the conversation over phone with respect to snake-bite would be recorded. This recorded information is processed to make it useful for drawing conclusions. Technically processing includes editing, coding, classification and tabulation of data with a view to facilitate its analyses.

Analyzing 147 phone calls between March - June, 2010 it was observed that phone calls from various districts are mixed in nature. There were 32 cases of poisonous snake bite, 92 cases were found to non-poisonous and the rest 23 were other bites. As regards, poisonous snake - four species such as Common Krait, Spectacled Cobra, Monocled Cobra and Russell's Viper are to be mentioned. In South 24 Parganas the presence of Common Krait and Monocled Cobra seemed to be highest. (See Table-10). The information contained in Table-10 shows that there were 6 cases of Common Krait bite and 6 cases of Monocled Cobra bite in South 24 Parganas.

Table 10 : Distribution of Phone Calls During the Month of March - June 2010

Districts	Seeking advice for treatment with respect to					Total
	Poisonous	Bite	Non-poisonous	bite	Others	
Burdwan	2		4		-	6
East Midnapore	3		12		3	18
West Midnapore	8		10		2	20
Howrah	2		1		-	3
Hooghly	1		3		-	4
North 24 Parganas	1		5		3	9
South 24 Parganas	13		50		10	73
Nadia	-		2		1	3
Murshidabad	2		4		3	9
Purulia	-		1		1	2
Total	32		92		23	147

Source : Register Book - Help Line, CJSS 2010

Data on places of snakes-bite is also culled from the call register. We have classified the place of bite in 8 categories. In 8 cases the classification of the place of bite could not be done due to improper information. It is observed that majority of the poisonous bite occurred in and / or around home while majority of the non-poisonous bite happened outside the home. The information contained in Table-11 revealed that 24 out of 32 poisonous bite cases occurred in and / or around the home. Moreover, total snake-bite at bed was observed in 13 cases and out of 13 cases in 9 cases it is poisonous bite. As regards non-poisonous snake-bite 24 cases were, found to be happened by the side of pond.

Table 11 : Places of Snake Bite - Poisonous & Non-poisonous

Places of Bite	Poisonous	Non-poisonous	Total
A. Home / attached to home			
1. At the courtyard	10	23	43
2. At the Straw Stack	2	4	6
3. At the Bed	9	4	13
4. At the Kitchen	3	2	5
B. Outside the home			
1. At the Pond	-	24	24
2. At the attached orchard	-	2	2
3. At the Road	2	23	25
4. At the Paddy field	4	4	8
C. Not mentioned	2	6	8
	32	92	124

Source : Register Book - Help Line, CJSS 2010

One last point to be mentioned is that there have been 8 reported deaths out of 32 poisonous bite from March - June 2010. In four reported death cases, the relatives of the victim informed the incident of serious snake bite to CJSS after 5-6 hours of the bite. CJSS through telephone tried its best but it was of no avail. Be that as it may, in 24 poisonous snake-bite cases CJSS had correctly handled the patient.

Table 12 : Lapse of time between bite and telephonic call for help

Assistance seeking by	Within 1 hour	After 1 hour but before 3 hours	After 3 hour but before 6 hours	After 6 hour but before 9 hours	After 9 hour but before 24 hours	After 24 hours	Total
Relatives of patient		5	1		1	1	8
Well wisher of patient	2	1	4 (4)				7 (4)
Trained Members of CJSS		6	-				6
From hospital by patient			2 (1)				2 (1)
from hospital by doctors	1	1			2 (1)	1	5 (2)
Total	3	13	7 (5)		5 (2)	4 (1)	32 (2)

Note : Figures in the bracket indicates number of deaths.

Source : Register Book - Help Line, CJSS 2010

In epidemiological study the disease causation in a broader concept depends on the complex interaction between 'agent', 'host' and 'environment'. This interaction is commonly known as 'epidemiological triad', which is the basis for understanding disease problem. In a similar way the high incidence of snake-bite and subsequent death in South 24 Parganas should be understood on the interaction between poisonous snake (agent), superstitions man (host) and habitation on the fringe of forest (environment). As habitation on the fringe of the forest can not be changed, reduction in the death rate of snake-bite patients requires a transformation in the mindset of poor people living in the area. There is no single stroke solution. It requires an intensive and sustained awareness campaign about the various species of snakes, variation in the snake-bite over the year, possible places of snake-bite and proper treatment of snake-bite patients.

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Three Thinkers : Aristotle, Hegel and Marx

Debiprasad Chattopadhyaya

[At the end of an interview with *New Left Review* (No. 68, July-August, 1971). Georg Lukacs said, "When all is said and done, there are only three truly great thinkers in the West, incomparable with all others: Aristotle, Hegel and Marx."

Debiprasad Chattopadhyaya started writing on this very theme (unfortunately we do not know exactly when) although he was most certainly not aware of Lukacs's view. The essay survives in his personal papers in two unfinished drafts, the first longer than the second. The second appears to be a slightly revised version of the first and breaks off at a point marked with an asterisk. The rest is taken from the first draft.

All abbreviations are explained at the end.

Ramkrishna Bhattacharya]

We are perhaps yet to await a comprehensive appreciation of what George Thomson describes as "the profound philosophical importance of the opening chapters of *Capital*." In the meanwhile, however, we may hope to understand some aspect of this with the hope that the present discussion, if followed up particularly by pointing to where it is wrong, may lead us to a fuller understanding of Marx's philosophical position and its significance for us.

Our starting point is the way in which, in the *Capital*, Marx looks back at his predecessors, that is the philosophers before him.

Obviously enough, designed above all "to lay bare the economic laws of motion of modern society" (p.10), the *Capital* is not expected to be an exhaustive evaluation of the development of philosophical thought up to the middle of the nineteenth century. It is not a treatise on philosophy but, as the subtitles state, "a critical analysis of capitalist production", "a critique of political economy". What is significant, nevertheless, is that it does contain illuminating philosophical comments on a large number of outstanding thinkers before Marx and, what is much more important, also the most vital clue to the history of philosophy up to his time. In short, the philosophical orientation of this masterpiece on political economy is decisive.

But the nature of this philosophical orientation must not be misunderstood, i.e. must not be understood in the wrong sense of some kind of speculative predilection. Already before Marx, Kant fully feels the futility of such a predilection, though, unlike Kant, Marx is equally

conscious of the futility of seeking consolation in faith, i.e. in morality and religion. In other words, the crisis of morality and religion – growing as both do from the same seed and thriving on the same soil – and, therefore, the latter can hardly provide with a valid escape from the former. Here precisely is the great departure of Marx as a philosopher. The accumulated experience of the history of philosophy up to his time leads Kant to despair that it is "the peculiar fate of human reason" to precipitate itself eventually into "darkness and contradiction". Hence, argues Kant, the only thing left for us to do is to "occupy ourselves with a less resplendent, but still meritorious task, namely to level the ground, and to render it sufficiently secure for moral edifices of these majestic dimensions. For this ground has been honey-combed by subterranean workings which reason, in its confident but fruitless search for hidden treasures, has carried out in all directions, and which threaten the security of the superstructure" (CPR 170). For Marx, however, this search for hidden treasures is as fruitless as to dream of a moral edifice of majestic dimensions. But the real malady of which both these are mere symptoms is traceable to a "remedial cause". Only the remedy, is so vividly in the *Capital*, shows is not where the traditional philosophers search for it.

The philosophical significance of this departure of Marx can hardly be overestimated and we can try to understand it from what Marx has to say in his *Capital* particularly about two of the greatest philosophers before him. They are Aristotle and Hegel, to whom Marx has the highest tribute to pay and from whom he has also the most pressing considerations to differ. Apparently, he has himself something in common with these two thinkers, as apparently, again, he finds it necessary to break away violently with both.

Let us first try to be clear why, of all the comments of Marx on the philosophers preceding him, those on Aristotle and Hegel are specially significant. Notwithstanding many a modern admirer of Plato, in Marx's own estimation, Aristotle is decisively the greatest thinker of the ancient period as Hegel is that of the modern age, that is the age in which Marx himself is reared up. Further, according to their own designs, both Aristotle and Hegel intend to represent the quintessence of the development of philosophical wisdom up to their own times. From the Ionians onwards, the entire course of the development of Greek philosophy is, according to Aristotle, a development towards his own philosophy. He seeks, in other words, to present his own views as a grand synthesis of Greek thought. Hegel puts forth practically the same claim, though on the basis of a survey of an incomparably greater mass of philosophical materials. The history of world-wisdom, in so far as it is known to him, is interpreted by him as but the unfolding through successive stages of the ultimate wisdom, i.e. the wisdom embodied in the Hegelian system.

The error of taking these claims on their face-values may be obvious. But that does not mean that we are to commit the other error, that is of overlooking what nevertheless is specially noteworthy about these philosophical enterprises. As a matter of fact, Aristotle does accommodate within his own philosophy much of what is actually worthwhile about the contributions of his predecessors. So does Hegel attempt, though inevitably in his own way, the most stupendous philosophical synthesis ever attempted by any thinker.

It follows, therefore, that Marx's assessment of Aristotle and Hegel is something more than a matter of looking back at two individual philosophers before him. It is rather an assessment of two thinkers who represent two great philosophical epochs and who, moreover, consciously accommodate within their views much that is actually noteworthy about

the contributions of their own predecessors. In this sense it approximates an assessment of the general tradition of Greek and modern European philosophy.

In such circumstances, if Marx shows – and I am going to argue that he actually does – that the immense philosophical potentialities of Aristotle and more particularly of Hegel get frustrated by objective conditions unsuspected by either, then in his general assessment of these two thinkers we may reasonably expect not only a clear caution against the repetition of the past errors in philosophy but also a definite pointer to the development of the philosophy of the future.

The basic clue to all these is to be found in the *Capital*, though for an understanding of their fuller implications we have sometimes to refer ourselves to some of the other writings of Marx as well as of the ablest exponents of his views.

* * *

To begin with, in the *Capital* Marx expresses tremendous admiration for both Aristotle and Hegel. He refers to Aristotle as a “great thinker” (p.82n.) and as “the great thinker who was the first to analyse so many forms whether of thought, society or Nature and among these also the form of value” (p.59). What he has to say about Hegel is, of course, oft-quoted: “just as I was working at the first volume of *Das Kapital*, it was the good pleasure of the perevish, arrogant, mediocre offsprings, who now talk large in cultured Germany, to treat in the same way as the brave Moses Mendelssohn in Lessing’s time treated Spinoza, i.e. as a ‘dead dog’. I therefore openly avowed myself as the pupil of that mighty thinker, and even here and there, coquetted with the mode of expression peculiar to him. The *mystification* which dialectics suffers in Hegel’s hands by no means prevents him from being the first to present its general form by working in a comprehensive and conscious manner.” (pp. 19-20).

I have added italics to the word ‘mystification’ above, because it speaks volume. In Marx’s own view, it is an expression – or, more properly, the expression in its most colossal form – of the illusion under the grip of which even the ablest of the traditional thinkers appear somewhat like blind pawns. As a philosopher, Marx himself is naturally concerned above all with this illusion, i.e. its nature, its source and the real remedy for it. Marx’s own concern for this illusion, however can best be understood in the background of the gigantic philosophical potentials which it baffles. For this purpose, we may have here a few more words about the greatness of Aristotle and Hegel.

One obvious reason for Marx’s admiration of these two thinkers is the determination of both to consider philosophical questions not in their abstract isolation but in their interconnection with the fundamentals of practically all the branches of knowledge known to them, – i. e., in short, the encyclopaedic tendency of both, a tendency in which they are surpassed only by one philosopher and that is Marx himself. As Engels explains, Aristotle is “the most encyclopaedic intellect” among the Greek philosophers (SW ii.128) and, along with Saint Simon, Hegel is “the most encyclopaedic mind of his time” (SW ii. 133).

The wealth of knowledge which Aristotle compiles and on the basis of which he seeks to present his own world-view is well-known. Here is how an eminent Hegelian describes it: “He receives with equal interest the fact of nature, or of history or of the soul of man. But he proceeds always by reference to what is individual; he requires always a *datum*, on occasion of which to unfold his thoughts; it is always what is empirical and matter of fact that solicits

his speculation and leads it forward. His whole philosophy is a description of the given and empirical, and only because he takes this up in its totality, taken up its synthesis, only because he carries the induction completely out, does not deserve the name of a philosophy This character of Aristotolian philosophy explains in the first place its encyclopaedic tendency, inasmuch as all the facts of experience have, as such, equal claims on observation. Hence Aristotle is the founder of several sciences unknown before him; he is not only the founder of logic but the founder also of natural history, of empirical psychology and of the theory of morals. True love of fact in Aristotle explains further his predominating inclination for physics; for nature is what is most a fact what is most indeniably *there*. It coheres with this, too, that Aristotle is the first philosopher who, (in his own way) designed to bestow on history any exact attention.” (Sch. 96) [Lenin PN 282 ff.].

In Hegel’s own time, compared to that of Aristotle, the accumulated stock of human knowledge becomes vaster. As a consequence, in the philosophy of Hegel this encyclopaedic tendency receives a much greater grandeur. Engels describes the Hegelian system as “covering an incomparably greater domain than any earlier system.” (SW ii. 364) and as “developing in this domain a wealth of thought which is astonishing even today. The phenomenology of mind (which one may call a parallel to the embryology and palaeontology of the mind, a development of individual consciousness through its different stages, set in the form of an abbreviated reproduction of the stages through which the consciousness of man has passed in the course of history), logic, natural philosophy, philosophy of mind, and the latter worked out in its separate, historical subdivisions; philosophy of history, of right, of religion, history of philosophy, aesthetics, etc. – in all these different historical fields Hegel laboured to discover and demonstrate the prevailing thread of development. And as he was not only a creative genius but also a man of encyclopaedic erudition, he played an epoch-making role in every sphere.” (SW ii. 264-5).

It is therefore, neither any dearth of knowledge nor that of logical acumen from which either Hegel or Aristotle really suffers. It is therefore, in spite of this we find them eventually landing in what Engels calls an “ideological perversion” (SW ii. 387), the cause thereof is obviously to be sought somewhere else.

Were then, are we to look for it?

I am going to argue that in the *Capital*, while explaining the cause of Aristotle’s failure to understand the real mystery of ‘value’, Marx gives us the most vital clue to it. However, before we pass on to discuss this clue itself, it is necessary to have a clear idea of the actual nature of this “ideological perversion.”

Engels uses this epithet in connection with the philosophy of Hegel, not because it is peculiar to the Hegelian philosophy but evidently because, proportionate to the great stature of Hegel as a philosopher, this “ideological perversion”, assumes in his system perhaps the most colossal form. To judge the “ideological perversion” therefore, it is only logical to recall first the gigantic achievement of Hegel himself, – an achievement which is frustrated and perverted by an illusion equally gigantic.

Hegel, as we have already said, attempts the most stupendous synthesis ever attempted by any individual thinker of everything known about nature and its reflexion in human consciousness viz. thought. The result is his discovery of the most fundamental laws of the development of nature, inclusive of course of the human society and the products of the

human brain. These are the laws of dialectics. This point is important and as against many a mystification of the word *dialectics* Engels takes special care to explain over and over again its real meaning: "Dialectics is nothing more than the science of the general laws of motion and development of Nature, human society and thought." (A.D. 210). "It is ... from the history of nature and human society that the laws of dialectics are abstracted. For they are nothing but the most general laws of these two aspects of historical development, as well as of thought itself." (DN 83). There is, of course, nothing to wonder at these laws of nature being at the same time the laws of logic or the laws of thought. As Engels explains, "if the further question is raised: what then are thought and consciousness, and whence they come, it becomes apparent that they are products of human brain and that man himself is a product of Nature which has been developed in and along with its environment; whence it is self-evident that the products of the human brain, being in the last analysis also products of Nature, do not contradict the rest of Nature's interconnections but are in correspondence with them." (A.D. 57). Consequently, argues Engels, "Nature is the test of dialectics and it must be said for modern natural science that it has furnished extremely rich and daily increasing materials for this test, and has thus proved that in the last analysis nature's process is dialectical. ..." (A.D. 39).

Of course, as is rather well-known, this is not the way in which Hegel himself understands the laws of dialectics. That is precisely because of his "ideological perversion" which we shall presently examine. Nevertheless, this does not prevent Marx and his followers to see in him the great merit of being the discoverer of the dialectical laws. To quote Engels again: "This newer German philosophy terminated in the Hegelian system in which for the first time – and this is its great merit – the whole natural, historical and spiritual world was presented as a process, that is as in constant motion, change, transformation and development. From this standpoint the history of mankind no longer appeared as a wild whirl of senseless deeds.* Incidentally, in the *Capital*, Marx himself shows how three laws of dialectics are found to operate in the field of economics *as much as in those* of the natural sciences: "the possessor of money or commodities actually turns into a capitalist in such cases only where the minimum sum advanced for production greatly exceeds the maximum of the middle ages. Here *as in natural science*, is shown the correctness of the law discovered by Hegel (in his *Logic*), that quantitative differences beyond or certain point pass into qualitative changes." (I.309). Such statements apart, or careful study of the *Capital* makes it clear how much practically the whole work is permeated by the laws of dialectics. It is no wonder that Marx avows himself as "the pupil of that mighty thinker", of Hegel.

At the same time, Marx finds it necessary to break away fundamentally from the way in which Hegel himself wants us to understand the Hegelian dialectics. "My dialectic method," says Marx, "is not only different from the Hegelian, but it is its direct opposite. To Hegel, the life-process of the human brain, i.e. the process of thinking, which, under the name of 'the Idea', he even transforms into an independent subject, is the demi-urgus of the real world, and the real world is only the external, phenomenal form of the 'the Idea'. With me, on the contrary, the ideal is nothing else than the material world reflected by the human mind, and translated into forms of thought. The mystifying side of Hegelian dialectic I criticised nearly thirty years ago, at a time when it was still in fashions With him it is standing on its head. It must be turned right side up again, if you would discover the *rational kernel* within the *mystical*

shell." (I. 19-20).

Here is an example of this mystical shell or the confusion of the material with the ideal. With all his encyclopaedic wisdom Hegel arrives at a theory of private landed property, which Marx, with all his admiration for Hegel, considers to be only comical: " Nothing could be more comical than Hegel's development of private landed property. According to this, man as an individual must endow his will with reality as the soul of external nature, and must therefore take possession of this nature and make it his private property. If this were the destiny of the 'individual', of man as an individual, it would follow that every human being must be a landowner, in order to become a real individual. Free private ownership of land, a very recent product, is, according to Hegel, not a definite social relation, but a relation of man as an individual to 'nature', an absolute right of man to appropriate all things. This much, at least, is evident: the individual cannot maintain himself as a landowner by his mere 'will' against the will of another individual, who likewise wants to become a real individual by virtue of the same strip of land. It definitely requires something other than goodwill. Furthermore, it is absolutely impossible to determine where the 'individual' draws the line for realizing his will – whether this will requires for its realisation a whole country, or whether it requires a whole group of countries by whose appropriation 'the supremacy of my will over the thing can be manifested.' Here Hegel comes to a complete impasse." (III. 601-2 n.).

This shows the kind of situation that Marx himself feels confronted with. On the one hand, he is fully aware that Hegel is too great a philosopher to be summarily dismissed, that his discovery of the laws of dialectics is too momentous to be ignored or left unadapted. On the other hand, he finds Hegel himself arriving at conclusions too fantastic to be seriously taken. In other words, between dialectics as presented by Hegel within its 'mystical shell' and dialectics as understood by Marx in the sense of its "rational core", there exists, in Marx's view, all the difference between illusion and reality. Therefore, the question that bothers Marx is : why does a philosopher as significant as Hegel succumb to such a pitiable illusion according to which the product of the human brain is virtually deified and considered as the demi-urgus of the universe? Why, in otherwords, does Hegel present his dialectics in such a peculiarly perverted form?

It is true that in the *Capital* Marx does not formulate this question in so many words. Nevertheless, a careful study of the work – particularly its earlier parts – shows that he is working with a clear awareness of this question and, what is more important, he succeeds in arriving at a clear answer to it. And, for the history of philosophy, this answer is no less epoch-making than Hegel's discovery of the dialectical laws. It solves not merely the mystery of Hegel but moreover the mystery of traditional philosophy as such. He finds that the illusion of Hegel is not peculiarly a Hegelian one. If not as old as philosophy, Marx traces its origin to a very early period, though, as is only to be expected, in the philosophy of Hegel it assumes a dimension proportionate to the somewhat fabulous amount of accumulated facts which this illusion seeks to pervert.

I am going to argue that the basic clues to all these is to be found mainly in Marx's analysis of a thing apparently remote from everything philosophical, i.e. commodity. But how can an analysis of commodity have such far-reaching philosophical implications? From Marx's own point of view, however, this is only to be expected. Two quotations from the *Capital* – the first concerning his renewed defence of the materialistic conception of history and the second showing the importance of commodity in the economic structure of society on which, as

superstructure, emerges the illusion under discussion — will explain this.

"I seize this opportunity", says Marx, "of shortly answering an objection taken by a German paper of Americal. 82 [86] n [Unfinished]"

Abbreviations:

A.D. Frederick Engels. *Anti-Dühring*.

C.P.R. Immanuel Kant. *Critique of Pure Reason*.

D.N. Frederick Engels. *Dialectics of Nature*.

P.N. V. I. Lenin, *Philosophical Notebooks (Collected Works, vol. 38)*

Schw. A. Schwegler. *Greek Philosophy (History of Philosophy, Part 1)*

S.W. Marx-Engels. *Selected Works*.

[Note : In the first paragraph, the quotation from George Thomson is taken from his *First Philosophers* (London, 1955), p. 7. In the last paragraph reference is probably made to *Capital* (Moscow : n.d.), pp. 64-66.]

Courtesy: Aditi Chattopadhyaya **P A S**

The Marxist Philosophy*

J.B.S. Haldane

Lord Haldane was a Hegelian through most of his life. And in his last years, as a member of the Labour Party, he was a moderate, but I think a convinced socialist. It is therefore fitting that a lecture in his memory should describe the philosophy which is largely based on that of Hegel and one of whose main features is an account of the nature of the transition from capitalism to socialism. In the last conversation which I held with him, a few months before his death, I mentioned the deep impression which had been made upon me by the prevalence of this philosophy in the Soviet Union, and the successful attempts which were being made to apply it in different fields, including my own field of biology. He answered that he was following its development, and I understood that he approved of it as a Hegelian, but condemned it as an idealist.

Like many other people, I had been unaware until then of the very existence of Marxism as a philosophy. I knew of Marx as an economist and a political organizer. I even knew something of the doctrine of historical materialism. But I had no idea that Marxist principles were applicable outside the social sphere, that an astronomer, a chemist, or a biologist might find them valuable aids to research. Unfortunately Lord Haldane died before I could take the measure of his agreement and disagreement with the principles.

At that time I merely took note of Marxism as one philosophy among many. It was not until I read Engels' books *Ludwig Feuerbach and the outcome of classical German philosophy*, and *Herr Eugen Düring's revolution in science*, generally known as *Anti-Dühring*, that I found that in his interpretation of science, Engels was far ahead of his time. Had these books been familiar to my contemporaries it was clear that we should have found it much easier to accept relativity and quantum theory, that tautomerism would have seemed an obvious hypothesis to

* Delivered at Birkbeck College, London, in 1938, as the annual Haldane Memorial Lecture. My late uncle, Lord Haldane, had done much for this college.

organic chemists, and that biologists would have seen that the dilemma of mechanism and vitalism was a false dilemma.

Nevertheless, I found Engels' materialism a difficulty, and above all, I was unable to accept the political implications of the theory, which ran counter not only to the views of conservatives and liberals, but to the socialist theories current in the Labour Party. Indeed, these implications, as developed, for example by Lenin, in *State and Revolution*, are, if anything, more paradoxical to a socialist who is inclined to exalt the State and to aim at making it the owner of all productive resources, than to a supporter of capitalism.

But a group of facts obtruded itself upon my notice. I found that the political and economic life of Britain was becoming riddled with internal contradictions. At a time when national self-sufficiency in food might be of vital importance, farmers were fined for growing too many potatoes. At a time when two European statesmen were openly claiming portions of the British Empire, I found the Conservative leaders in Britain abrogating the principles of international law and refusing to carry out their obligations under it, in such a way as to favour the statesmen in question. I found the Conservative Members of Parliament greeting with laughter and cheers the news that British ships had been captured.

And I observed similar phenomena in the moral field. The growth of corruption in public life was obvious, even if only rarely, as in the case of Mr. Thomas, did a lapse from nineteenth-century standards of honesty receive publicity. The events leading to the abdication of King Edward VIII showed how hollow were the phrases and how artificial the sentiments which supported so important an institution as the monarchy. It is true that few among our political leaders possess the intellectual honesty of Captain Balfour, the Under-Secretary for Air, who wrote, in a letter to *The Times** on British foreign policy.

This conclusion may be right normally or it may be wrong. It may be said to be breaking pledges made by any pledges. But none of this matters.

Nevertheless, it was clear that in practice the moral standards to which the British ruling class for a century or more had rendered complete service in a word and a good deal in deed, had become obsolete.

And this was not, as might have been supposed, part of a general decay of morality. Our prisons were being emptied. Drunkenness had enormously declined during my own lifetime. The average man and woman had become kinder and I think juster, if perhaps a little less honest. The decay of religion could hardly be blamed, when Lord Halifax lectured to the League of Nations on the unpractical character of moral ideals, and the Pope blessed the bombers of Barcelona.

In fact, the situation did not make sense, from my existing point of view. A realization of such facts has driven one group of intellectuals into a belief that civilization is doomed, whilst others call for a return to pre-scientific thought and practice. The latter solution seems to me particularly futile.

Even God cannot abolish historical fact.** If we go back to a medieval or earlier type of civilization it will be through disaster and not through Erewhonian planning.

But from a Marxist point of view the social phenomena of our day are intelligible. A number of them had been predicted in some detail by Marxist writers, though often with too short a time-scale.

* 21st March, 1938.

** Agathon

And, though unpleasant, they are encouraging. In fact, Marxists are the only intelligent people who preserve their grandparents' belief in progress. Not of course in gradual and orderly progress, but in progress where in developing communities epochs of slow advance are punctuated by heroic ages like the present in which a new social order is brought to birth. In this birth certain desirable cultural features of the older civilization may be lost unless special efforts are made to preserve them by those who understand the nature of the process.

As a result of my scientific and political experience I had to accept Marxism as the best available philosophy. This acceptance does not mean that I think Marx never made a mistake. Of course he did. So did Newton, Linnaeus, Dalton, Darwin, and every other great man on whose general principles I rely in theory and in practice. Nor do Marxists regard Marxism as a final and unalterable system. At best it is the most satisfactory philosophy which was produced in the nineteenth century. It could not have been produced earlier. It will doubtless be improved later. But Marxists see no reason why it should be completely superseded any more than Newton's cosmology has been superseded by Einstein or Dalton's atomism by Rutherford.

Before sketching this philosophy I should like to make a preliminary apology. I am in no sense an expert on Marxism. There are others far better qualified than myself to give this lecture. Indeed I have only undertaken the task because of the extraordinary statements which are made on the subject by otherwise well-informed people. For example, it is commonly stated that Marxism exalts the State as against the individual, that it preaches fatalism, and that it regards man as the slave of economic forces. We shall see later how far these statements are from the truth.

The Marxist philosophy is called dialectical materialism. It traces its origin on the one hand to the mechanical materialism of the French eighteenth-century philosophers such as Diderot, and on the other to the dialectical idealism of Hegel. Feuerbach was the first to attempt a synthesis of these apparently very disparate tendencies. But Engels, while acknowledging his debt to Feuerbach, pointed out the inadequate and inconsistent character of much of his writings. Marx's philosophical synthesis was largely contained in manuscript notes, incidental remarks in his political and economic writings, and in verbal teaching. Engels was more systematic, but he too refused to dissociate philosophy from practical activities by writing a textbook.

Because, like Plato and many other Greek philosophers, they were deeply concerned with the practical results of their theories, Marx and Engels are difficult reading for a student of philosophy who wishes to describe their system among others. This has led, on the one hand to a neglect of their views by most teachers of philosophy in Britain, for which there are also other reasons, and on the other, to a need for further expositions of some parts of it, of which Lenin's *Materialism and Empiriocriticism* is particularly valuable.

There is, however, another reason for their failure to cover certain fields which few systematic philosophers have neglected. They had too great a respect for science, and they realized fully that Hegel's Philosophy of Nature had failed because he attempted to give answers based on pure reason to questions which could only be solved by observation and experiment. Thus while they were convinced that as an historical fact matter existed before mind, they did not embark on any detailed speculations as to how mind arose. This was not because they regarded it as an insoluble problem but because the data from evolutionary history and cerebral physiology were not (and indeed are not yet) available.

Marx had intended to be a philosopher, and was awarded a doctorate for a thesis on

Epicurus. He abandoned an academic career because the Prussian Government dismissed men on less radical views than his own. It is amusing but futile to speculate on what would have been his intellectual output had he been born in a more liberal state.

Dialectical materialism is a whole. In an attempted presentation it must be dissected into apparently separate principles, and thus lose its unity. I should like to emphasize that one can only learn its principles and practice by applying it to a set of which one has detailed knowledge, whether they be concerned with the development of mathematics, the genetics of populations, or the relief of unemployment. For this reason a formal and abstract account can give no idea of its power as a method.

To begin with, Marxists acknowledge the unity of theory and practice, but the primacy of practice over theory. They hold that academic philosophies have been largely futile because their authors did not test them on the hard touchstone of action. Indeed many of them tried to avoid practical activity as far as possible. But Marx wrote,* "Other philosophers have interpreted the world. The point is to change it." And as a Marxist must be prepared at any moment to stake his life on the truth of his philosophy, it is natural that he attaches a greater importance to practice than does the metaphysician. In the same way the physicist who proposes to test his theories in an actual aeroplane flight keeps closer to hard facts than the theorist of the expanding universe!

By materialism is meant the acknowledgement of the temporal priority of matter over mind, and the belief that there are unperceived events. The word is not taken to imply the unreality or "lesser reality" of mind, as compared with matter, or the theory that either man or the universe are mere machines. Nor does it imply that nature is built up out of eternal bricks. On the contrary, at a time when atomism appeared to be triumphant, Engels insisted that reality consisted of processes, not things. He would certainly have welcomed the cosmological theories of Milne⁺ and Dirac⁺⁺, according to which even the laws of nature change. For example, according to Milne, the wave-length of a spectral line, measured in terms of a material rod, is gradually diminishing; and in relation to the day or year, chemical processes are speeding up.

What sort of properties has nature, or matter? It is in constant flux. No one can cross the same stream twice, as Heraclitus, to whom Marx and Engels acknowledged their debt, put it. And it embodies the unity of opposites. Plato saw that a body was at once large and small, hard and soft, and concluded that size and hardness were real, but matter was unreal. If we have resolved Plato's contradictions, or at least become accustomed to them, we are confronted to day with still stranger contradictions, such as the fact that matter and light combine properties appropriate to particles with others appropriate to systems of waves. I do not think that there is any choice between denying the reality of matter and admitting the unity of opposites.

If we do so we find our path smoothed in all branches of science. We no longer ask, "Is the organism a whole or an aggregate of parts?" We ask, "How much of a whole is this particular organism at this particular time?" It then becomes clear that a man is not a complete whole. For example, two men of the same group can exchange blood. But he is more of a whole than a flat-worm or a primrose. For both of these can be cut in two in such a way that both halves will live; and a man cannot. We note that in an animal or plant anabolism, or

*Theses on Feuerbach

++ Prac. Roy Soc., A. 1938.

building up of tissue, is united with catabolism, or breakdown. One may predominate, as in a growing or starving organism. But in the most highly developed animals, such as adult mammals and insects, they are very evenly balanced.

We are not surprised when Freud tells us that insects making for death are as real and important in the human mind as those making for life, even though we may not accept the whole Freudian psychology. In the state we find the same conflict between classes which, according to Marx, is part of its very nature. Only in relatively few cases can this unity of opposites be regarded as a mere equilibrium. If, for example, I say that John Smith is a man, I assert the unity in him, of the particular, John Smith, and the universal, man. This cannot in any way be regarded as an equilibrium.

Now in Hegel's philosophy the unity of opposites was treated idealistically. The categories were supposed to have a timeless existence, and to be combined in various ways in the phenomenal world. Nature was explained as the development of the absolute idea. The principles of change were called dialectical because they were exemplified in dialectical thought. And Hegel believed that nature mirrored thought. Marx on the other hand went back to the common-sense view that thought and other mental processes mirror nature with different degrees of exactitude. Of two similar things, of which one is the copy of the other, the one which was there first is the original. And Darwin's work left Marx with no doubt that nature was in existence before mind. On the other hand, if the dialectical principles which govern thought are images of natural principles we must give up the theory that nature merely consists of moving particles. Metaphysics is an illusion, in the sense that there is nothing beyond nature; but nature is infinitely more complex than the mechanistic materialists thought. It is clear that this philosophy encourages a scientific approach to all problems without in any serious way limiting the kind of explanation open to the scientist.

Another fundamental dialectical principle is what Hegel called the transformation of quantity into quality. Marx interpreted this rather obscure phrase as follows; "Here as in natural science, is verified the correctness of the law discovered by Hegel in his 'Logic' that merely quantitative changes beyond a certain point pass into qualitative differences." Classical examples are the sudden changes of state which take place when, for example, water is boiled or frozen, and the changes which occur when we pass along in a homogenous series such as the paraffins ($C_n H_{2n+2}$). Throughout the nineteenth century scientists tried to show that discontinuous or qualitative change was more or less illusory. The mathematicians worked with continuous variables. The physicists rotating body could have any angular velocity out of a continuous range. Darwin and the biometric school believed in the continuous variation of living organisms.

Twentieth-century physics are dominated by the quantum theory which is perhaps the most fundamental form of the transformation of quantity into quality. If an electron could circulate round an atomic nucleus with any angular momentum the rigidity of bodies and the sharpness of spectral lines would be inexplicable. They become intelligible and predictable because only certain angular momenta are possible. The attempt to explain the boiling of water and other changes of state in terms of the classical physics has failed. We now speak of discontinuous changes of state in terms of the classical physics has failed. We now speak of discontinuous changes of state in single molecules or atoms, which change their properties when they absorb energy in certain definite amounts. Attempts to explain this fact in terms of other physical principles have met with little success. And few biologists believe in absolutely continuous variation.

The passage of quantity into quality is familiar to students of Aristotle's ethics. Aristotle said that a coward took too few risks, a rash man too many, a brave man an intermediate amount. In economics Marx illustrated it by the fact that a small amount of money cannot function as capital, whilst a large amount can, and by other examples.

Perhaps the most characteristically Hegelian principle in Marxism is that of the negation of the negation as a fundamental process in development. Let us take a characteristic example from psychology and ethics. A baby, after it has made its first, and perhaps most difficult, adjustments to the world, may develop into a "good" child, which always obeys its parents, is never late for school, and never breaks any rules. Such a child is in the state which Hegel described as innocence, a negative condition which is a source of alarm to wise parents. They know very well that if it is to develop a positive character it must transgress rules from time to time, and be punished for so doing. And it must have temptations and learn to resist them, or at least some of them. It must pass through a stage of guilt, the negation of innocence, before it can attain to virtue.

This principle is one of the main sources of progress in mathematics. We must first dare to break a rule. For example, in order that all quadratic equations should be soluble, complex numbers were invented, which violated the rules of ordinary arithmetic. For instance, the square of such a number might be negative. When the laws of arithmetic had been recast so as to allow of such numbers, a new stage of mathematics based on the theory of the complex variable, became possible.

Sometimes a long time elapsed before the process was completed. Newton and Leibniz in the seventeenth century dared to break some of the laws of mathematics by introducing infinitesimals, and thus invented the differential calculus. It was only in the nineteenth century that Weierstrass, Cantor, and others gave a formal justification for this step, and a satisfactory theory of differentiation arose. In the same way Fourier violated a number of rules when he introduced harmonic analysis, and it was not till much later that Lebesgue provided a rigorous theory, which led to further progress.

Marx used this principle to illustrate economic progress. In the Middle Ages almost every skilled workman owned his tools, and the yeomen farmers at any rate owned the land on which they worked in England, as peasants do in many parts of Europe to-day. But the workers were expropriated from the means of production, sometimes by force, as in the case of land enclosures; but generally because capitalistic manufacture and agriculture based on a widespread division of labour, were more efficient than the individualistic forms. However, capitalism is now developing its own internal contradictions. Cyclical disturbances are increasing in intensity. And monopolism is leading to the restriction of production. When this breakdown becomes sufficiently severe it leads to socialism, in which the workers once more own the means of production, though no longer, save in very rare cases, individually. The negation is negated; the expropriators are expropriated.

The refusal to recognize this principle has led to great difficulties in understanding evolution. Darwin believed that evolution occurred because in many species the majority of individuals died before they could reproduce, and their death was a selective process. Many people rejected the idea that mere killing could cause increased perfection. Actually Darwin's principle can be extended. A perfect organism could not evolve. It must, to begin with, be mortal. If it reproduced itself exactly it would gradually become out of date. On the contrary a real organism reproduces itself inexactly, thus giving the possibilities of variation. Most of the deviations from the normal are harmful, and natural selection is mainly concerned in

eliminating them. This is only possible when there is an over-production of offspring. All these conditions are only pre-requisites for evolution, and all of them are harmful to the individual.

This state of affairs is intelligible neither to the subjective idealists or Panglossist who thinks that all is for the best in the best of all possible worlds, nor yet to the mechanistic materialist who does not realize that reality is far greater when one says man is naturally evil. According to Hegel, evil is the form in which the motive force of historical development presents itself. This indeed contains the two-fold significance that while, on the one hand, each new advance appears as a sacrilege against things hallowed, as a rebellion against conditions which, however old and moribund, have still been sanctioned by custom; on the other hand it is precisely the wicked passions of men, greed and lust for power, which since the emergence of class antagonisms, serve as levers of historical development.*

At this point, or earlier, a critic is likely to accuse Marxists of clandestine idealism. "You are talking about contradictions in matter, whereas contradictions are mental phenomena. It was legitimate for Hegel to use dialectic, because he was an idealist. It is wrong for you to do so." The Marxist replies that he has a good deal of confidence in the human mind. He thinks it is so intimately dependent on matter that it really can mirror its behaviour. And he points out that the union of opposites, for example, is very often a hard physical fact. An electron is completely hard in the sense of being indivisible, a gas completely soft in the sense that it opposes no resistance to division, if this is done slowly enough. Hardness and softness are united in ordinary solids. Acetic acid is an acid, ammonia is a base; glycine, which is one of the essential constituents of proteins, is both an acid and a base at once, and therefore has some new properties.

The Marxist theory of truth is straightforward. Absolute truth, except perhaps on trivial matters, is never reached, but continually approached.

The question whether objective truth can be attributed to human thinking is not a question of theory but a practical question. In practice men must prove the truth, i.e., the reality and power, the this-sidedness of his thinking. The dispute over the reality or non-reality of thinking which is isolated from practice is a purely scholastic question?+

But since Marxists believe in the existence of the world apart from our minds, Marxism has little affinity with pragmatism.

Dialectical materialism as applied to human society is called historical materialism. This doctrine does not deny the freedom of the human will or assert that man is the slave of economic processes. But it states that the most fundamental features of human societies with a class structure are determined by their productive processes, using the world production in its broadest sense, to include transport and other processes in which human labour adds to the value of the goods. I do not think that Marx or Engels thought that this principle held to anything like the same degree in primitive societies with a slightly developed class structure.

The alternative theory is that the economic structure of a society is determined by its political structure, the latter being based on consent or on violence. Marx and Engels were equally critical of Rousseau's theory of the social contract, and the anarchist theory that property is theft. They also criticized those of their disciples who attempted to give an economic interpretation of every detail of history. They pointed out the obvious fact that institutions possess a very great inertia, and continue to function and even develop long after

* Engels in *Feuerbach*.

+ Marx's theses on Feuerbach.

the economic processes which originally determined them are finished. They also admitted the importance of what from the historical point of view are accidents, such as the births or deaths of great men, but added that on the whole these accidents cancelled one another out, and did not affect the general course of history.

Here we must say a few words about the Marxist theory of the freedom of the will. Engels quotes with approval Hegel's saying, adopted, I think, from Spinoza, that freedom is the recognition of necessity. Thus we discover a scientific law, for example that people who drink water polluted with *Bacillus typhosus* very often develop typhoid fever. This at once opens the possibility of circumventing it. For we can escape infection by boiling our water or getting immunized. So freedom is continually negating its own negation. Throughout history men have never been completely their slaves. But the economic system has determined the form of the struggle.

When, however, we recognize the necessity, that is to say adopt historical materialism, we become freer. We attempt consciously to remedy not merely this or that evil, such as slums, malnutrition, or war, which results from the operation of economic laws, Marxism shows how his existing partial slavery to them can be overcome.

A philosophy of history can never be proved *a priori*; it can only be tested by its applicability to particular events, and particularly by examining its powers of prediction. For this reason few of Marx writings are more suitable for those who are genuinely anxious to test the validity of his theories than those, such as *The Eighteenth Brumaire of Napoleon III*, in which he analysed the events of his own age. I do not suggest that he never made a mistake. He did make mistakes, but he made vastly fewer than any of his contemporary writers known to me who did more than chronicle the events of their time.

The most comprehensive attempt to apply this philosophy to human existence as a whole is Engels' *The Origin of the Family, Private Property, and the State*. Of course, this would have to be re-written to some extent in the light of increased modern knowledge of prehistoric technique and of existing or recently dead primitive societies. Many people doubt Engels' view that sexual relations between exogamous groups were ever promiscuous. However, anthropologists to-day would, I think, accept his statement that at a certain stage of development the normal organization of a primitive group is as follows. The tribe is divided into several exogamous groups, or *gentes*, membership of which is matrilineal. The gens is the effective unit for many economic and other purposes. Such property as cannot be carried about, for example, gardens, may be assigned to individuals for life, but ultimately revert to the *gens*. There is strong evidence that this system existed shortly before the dawn of history in ancient Greece and Italy. It is probably a universal step in human development, except where people in a still earlier stage has been conquered before it could reach this one.

As productive technique improves, and particularly when animals other than dogs are domesticated, the gens tends to become patrilineal. A man can now leave his property to his sons, instead of his sisters' sons. The nature of the family changes radically. It becomes patriarchal and accumulates property, such as houses and herds, though neither may at first be individual property. Thus class-divisions based on economic differences arise, and an organization is needed to perpetuate them; to keep order in conservative terminology, to oppress the poor in radical terminology.

For Marxists the state, with its police, standing army, tax collectors, and so on, is a parasite on the community, and a product of the class struggle. There is no state in the primitive classless societies. This theory appears paradoxical to us to-day, because, whether

socialists or not, we are mostly conscious or unconscious state-worshippers, who confuse love of our country with reverence for the state. In our grandparents' time it was far easier of acceptance. Not only did radicals inveigh against state parasitism, but so conservative a writer as Cardinal Newman* wrote, "In a civil polity the State exists and endures by means of rivalry and collision, the encroachments and defeats of its constituent parts."

As long as there is a class-struggle there will be a state, and when the class-struggle comes to an end the state will wither away. It is useless for the anarchists to try to abolish the state. It is needed in the early stages of socialism while the class-struggle continues. On the other hand, it will be necessary, in order to achieve socialism, to scrap the existing state organization pretty completely, and to substitute one which is as intimately in touch with the workers as the existing state organization is with the well to do.

Marx is probably best known for his economic analysis of the rise of capitalism, its nature, and its internal contradictions. His most striking single contribution to economic theory is his theory of surplus value. I have no intention, if I had the power, of expounding his economics. I would only point out that in so far as he predicted that capitalism would work progressively worse, his prediction has been verified. On the other hand, he did not give a detailed prediction of the present stage of economic development, which is characterized by monopolism, imperialism, and finance capitalism. One of its most striking features is the existence of massive unemployment even during periods of comparative prosperity. This stage has been analysed particularly by Lenin in *Imperialism*.

I would add that, if *Capital* is Marx' greatest work, it is also his most difficult, and that so far from its being familiar, it has never been published completely in England, the only full edition in our language being printed in Chicago.** It is certainly one of the last rather than the first, works which anyone should read who wishes to understand Marxism. While he exposed the evils and injustices of contemporary capitalism, he did not think that it would perish primarily because it was unjust, but because it was inefficient, though, of course, the injustices would furnish motives for its overthrow.

Granted that it was possible to achieve an economic system combining on the one hand large scale and therefore efficient production, and on the other the abolition of a class living wholly or mainly on the surplus value created by the labour of others, how was the transition likely to be achieved? Fourier, Owen, and others thought that a scheme could be worked out in considerable detail, and then adopted by general agreement. Marx, although admitting his debt to these thinkers, characterized them as Utopian rather than scientific socialists, because they did not see how largely political and other ideas are determined by the economic structure rather than scientific socialists, because they did not see how largely political and other ideas are determined by the economic structure rather than by reasoning. The determination is not direct. One does not say "this is right and reasonable because it is to my advantage or that of my class." On the contrary, the motivation is largely unconscious, and Engels' brief account of unconscious motivation anticipates that of Freud and other modern psychologists.

The Marxist sees how capitalism develops self-contradictions not merely in the economic but in the intellectual field. He notices how (to take a very simple example) the British government at one and the same times does its best to protect British capital invested abroad, and to prevent by means of tariffs the inevitable result of that investment, an unfavourable

* *Apologia pro vita sua*, p. 391, London, 1864

** A London edition has since been printed.

trade balance; how it is inevitably torn between contradictory interests in any attempt at planning. He sees how these contradictions are multiplied under fascism, where the same government clamours for colonies on the ground of overcrowding and encourages large families, or boasts of the importance of racial purity whilst attempting by conquest to incorporate members of different stocks to its own. To the Marxist these are not so much examples of conscious hypocrisy as of muddled thinking which is the result of muddled economics. For as Engels saw, a large number of people may will the same things, but the resultant of all their wills may be something quite different.

Given such facts, the truth of Marxism is very far from assuring its acceptance. Marx thought that socialism could not be achieved by legal means in any great nation except Britain and America, and even there he thought a "pro-slavery revolt," to use his own analogy, quite possible. Lenin thought that the social structure of Britain had so altered that any attempt to introduce socialism by constitutional means there would be opposed by violence. Thus a Marxist must be prepared for revolution, though in this country such a revolution could only be one in defence of our existing rights. Lenin's statement* on the subject is perfectly clear.

The fundamental law of revolution, confirmed by all revolutions and particularly by all three Russian revolutions in the twentieth century, is as follows: it is not sufficient for revolution that the exploited and oppressed masses understand the impossibility of living in the old way and demand changes; for revolution it is necessary that the exploiters shall not be able to live and rule in the old way. Only when the "lower classes" do not want the old and when the "upper classes" cannot continue in the old way can the revolution be victorious.

This is, of course, well illustrated by the history of the English Revolution of the seventeenth century; and there is a strong conservative sentiment behind every revolution. At the present moment revolutionary ideas are spreading rapidly in** Britain because the Government is violating international law, and many people believe that the ruling classes are prepared to break the laws of their own country as they did in Italy, Germany, and Spain. The Marxist analysis of the state shows why a state may be prepared to sacrifice its interests in the international field in order to preserve its class structure, and thus renders the existing political situation intelligible.

One of the commonest criticisms of Marxism is that it is a body of quasi-religious dogma which must be blindly accepted. "Our theory is not a dogma but a guide to action, said Marx and Engels."*** For this reason it is impossible to accept it without taking part in action. It presents very real difficulties to one who has been brought up in the metaphysical tradition. Yet a previous acquaintance with Spinoza the French eighteenth-century materialists, and Hegel, is ultimately of great value to a Marxist. But it is not until one applies it to concrete problems that one realizes its power. I was fortunate enough to be educated in biology by my late father, whose views on biology were close enough to dialectical materialism to cause a Moscow radio speaker to recommend one of his books to British readers. And I have found Marxism of real value in the planning of biological research.

But great as is its value for science, it was primarily fashioned to allow political and economic events to be predicted and controlled. Here my own reaction to it has been like my reaction to organic chemistry. I could not wholeheartedly believe in the latter until I had not

*Left Wing Communism.

** In the week before this lecture was given over 600 Londoners joined the Communist Party.

*** Left Wing Communism.

merely verified the feasibility of textbook experiments, but actually used it as a guide to action, correctly predicted the properties of some hitherto uninvestigated substances. When on the other hand one accepts either organic chemistry or Marxism as part of one's daily thought, the world appears enormously richer in content and fuller of pattern. Just for this reason it is peculiarly difficult to expound Marxism unless one is sufficiently convinced of its validity to apply it in many different fields. This must be my excuse for trespassing on the professional philosopher's ground.

When a philosophy is daily assuming greater practical importance it is desirable that it should be presented to university students as part of their general education. Whether or not Marxism is true – and the course of history will prove or disprove its validity – it is undoubtedly destined to play an increasingly important part in the history of the world in general and this country in particular during the next few years. And it is therefore a fitting subject for a lecture in honour of Lord Haldane, who combined philosophical theory with political practice, and made notable contributions to both. **P A S**

From the Desk of the Mind-Painter

From Honesty to Social Fear

Satyakinkarbabu is truly an honest school teacher. He is courageous, bold and very much aware about any kind of illegal activities happening around him. In his locality he is quite popular. Not only in the school but also in the locality he is revered as a dignified school teacher. He is the chief strength in any untoward situation in his locality. Nobody dares to speak before him. The young stars of the locality always obey his thunder voice. They also get help from him in various ways.

"Everybody knows me in such a way that it would be impossible for them to imagine that I have such a problem so that I can have to visit to a physician. Nobody except you in this earth does know about my crisis."

I assured our teacher that we keep the personal information of our client confidential. It is natural that many persons around us are silently suffering from various crises but that is not known to others. Our teacher with his big stature began his case history with a little hesitation, "Today I have come here for a definite reason but I am suffering with the problem for at least last three years."

"Then why you are so late?"

"Actually I had thought that I could manage it. But when I see my name in the list of election duty then it became imminent to come to you for some help."

"Then should I only give you a medical certificate? Or"

"No I want to be treated."

"Then you can describe your problem from the onset."

"The main problem is an irrational fear though it vanished when I go back to my home. But whenever I come out I started to feel anxiety and tension. If I pass across a crowded place or jostling of many people then I feel trembling all over my body along with a little sweating, a sense of compression in the left side of the chest and feeling of palpitation. I have visited to a cardiologist, done ECG but no abnormality has been detected. Cardiologist says I am suffering from anxiety-tension, although I am also thinking in the same line.

So I have come here. Whenever I notice some urchin in the street, coming close to me then I start a feeling of palpitation. It is a matter of wonder to me also. If they start unnecessary noise, there is a feeling of discomfort inside my body. I try my level best to keep myself composed by not moving from that place as if I am not noticing anything. If there is any quarrel in the bus-train regarding sharing of seat I start palpitation. I particularly feel it when some junior create some noise within themselves."

"But how it has been started? Is it after some particular incidence or insidiously due to some sporadic incidences."

"Perhaps a major incidence occurred three years ago. I cannot recall it clearly but there is some association of my problems with that incident. The juniors of my locality used to respect me. They obey me and sometimes get scared. Actually they have not that courage to do any illegal activity in my presence. Recently I am observing that under the shelter of some political party they quickly turned aggressive. I have heard that in the last election they had captured the booth which was unprecedented in our locality. But they were not there when I have visited to cast my vote.

"Still I was not happy at their behaviour and gestures. Wearing hat and a stick in hand they start bossing over the innocent people. I felt disgusted. Later I have heard that many people of our area could not cast their vote. That very incidence occurred after few days. One vegetable seller of our local market passed his livelihood by selling vegetables is arrested by them for huge ransom. That poor unfortunate creature started to weep effusively. The boys started to beat him in broad day light in the open market by throwing him on the street in front of at least few hundred people. Everybody knows they are the supporters of that party. So nobody dare to protest against them, they kept mum.

They collect donation from house to house in this way under pressure. Nobody is bold enough to refuse it. I could clearly recollect that once upon a time many of them were my student. So I could not imagine that I have to tolerate their aggressive attitude and I tried to face it. I assumed that at least in my presence they would be restrained from their irregular activities. But what happened is unbelievable to me. They used filthy abusive languages and ridiculed me in such an authoritative voice that I became bewildered. When I fixed my eyes on them as a fearful teacher just to show them my presence they burst into laugh.

Values, what is just or unjust, what we should or should not do all these materials are useless, meaningless to them. I assume they are a new generation who are quiet unknown to me. Anytime they can crush the morality and value with their stick in hand without any kind of repentance. However after this incident they have launched further attack on my house. As because I have started to organise people of my locality against them, they threat my teenage girl to face dire consequences if she come out of home for any reason, as a result of protest. My friends suggested that I should not complain the matter to the police as the police would positively suggest them for an amicable settlement of the matter across the table. Otherwise they would target me. On the other hand my friends suggested to go slow and gradually everything would be settled.

While talking our teacher was sweating profusely and breathing deeply, quickly. I said, "Not only you but also all of us obeying all this without any protest and that is torture towards our conscience."

"Then what is the meaning of this kind of living? Is it not better to die? However you should give me a certificate. I do not know whether you have any experience regarding election duty or not. It is a kind of oppression for any self-respectful person. Always you have to abide by

the command of others. You cannot protest against the mischief occurring in your presence. You have to sign on all this papers whether it is right or wrong. After all they would make you a sheep and every time you have to follow them blindly. Till date somehow I have made my protest but gradually the condition is becoming worse. Sometimes I think I do not run away in fear! I should protest against all this misgivings. I am ready to die, if that happened so. Why I have not that courage?"

However my certificate did not carry any weight. Finally our teacher had to attend the election duty. He had to take the responsibility of a presiding officer just near a distance of few railway stations. I have been called on the day of general election. I have been informed that our teacher has admitted to a local nursing home due to some serious illness. So I have to attend him in no time.

Being discharged from nursing home after few days our teacher attended my chamber. He looked reserve, stunned, unmindful while he was handling the paperweight on the table. "What exactly happened Sir?"

"How exactly it happened I do not remember but on that day I became a bit obstinate. I promised I should go to the end but should not allow them to cast a single false vote. Even if they would threaten me by touching revolver on my chest, I would rather ask them to shoot. In the beginning of polling everything was peaceful. Gradually the overall picture of the surroundings began to change. A gangster entered and tried to crowd the table. They turned a deaf ear to my protest. I assumed that they have instructed the on duty police-man to go away from that place.

Perhaps you know the police have no special power in this day. Suddenly I recognised one of my students who had casted vote few hours early. I turned my eyes on him with the idea that he would feel ashamed for this kind of mischief. Because I considered that at least they should obey me. Alas! Where is the shame! That urchin also tried to keep his eyes on me with a smile and asked me - Sir, do you feeling good? When I tried to resist him then and there a group of young people started shouting and tried to assault me. They lifted my chair and advised, please be seated in the room beside, we would call on you whenever necessary. We are finishing the casting of votes. While saying so they started stamping on ballot papers indiscriminately.

For many days I was thinking of some opportune moment but could not reach the climax. Now I was in a position to see the extreme. Momentarily I thought if I do not sign in this paper or if I make complain that I have to sign on the paper under duress, in spite of that I cannot escape from this situation. They would inform their members in my locality and imagining the dire consequences some horrible feeling happened to me. There was a sense of compression around the chest. I was sweating profusely. I was visualising total darkness surrounding mine. Then I was let into the floor. As I hinted they opened my bag and take out some emergency tablet and shifted me to a nearby nursing home. Before admitting to the nursing home I had to sign in many papers as they suggested me to do so. However I did not aware where I had signed in some rubbish papers."

"Already you were suffering from some chronic anxiety state and then it transformed into acute panic attack. When our anxiety-tension reached into a peak we apprehend that we are at the verge of death or it gave the signal of some imminent danger. Then and then only our mind could not carry out our consciousness and this distressed consciousness overwhelmed our physiological functions of the body. The consciousness and body both this two sides of us fell ill, so we have to escape from this critical situation.

"In this way we adapt to our environment. You have signed on all this papers in a distressed condition so you could accept it easily. Actually sir, the form of protest or resistance what you are saying are not at the control of an individual person. There is some protest that is not at all possible for any individual person it has to be organised with a collective force of people. A rigid fixed ego has pervaded into your mind that if you do not protest to each and every kind of illegal work then you will be a coward or a pygmy. I have to consider whether the protest that I want to raise is at all possible for me. I have to decide whether I can continue my protest or not. In such miserable condition if we still raise our voice then it is just to glorify our self.

"When some protest is equated to invite death then we have think pros and cons of the protest. This cannot be considered as a cowardice attitude. Because the reason for which I would sacrifice my life should have that amount of greatness and profundity so that I should feel any remorse. Otherwise it would be a mockery with life. To sacrifice life for a sporadic cause and to sacrifice life for the freedom movement of our country could not be the same thing."

"Then in your opinion we should keep mum all the times even if you see all kinds of illegal activities surrounding us? Always we should make compromise? Is it not a torture over our conscience?"

"Yes it is the struggle inside us to cope with this mental agony. It is not something unique that you must fight it out and all the time everybody recognise you as a protestant but this is not struggle within our self. What we are liable to answer to our self is the fundamental thing. When I can realise that my ridiculed condition is not a sporadic incidence against my sense of pride but it is a consequence of stark social reality and if I can intermingle myself within this social reality then I can silently build within myself a promise that I have to participate socially to eradicate this social malice. Then only I am the winner in this struggle.

"What you are saying compromise, we can say it adjustment. In a new situation and environment we have to think in a fresh way. Temporarily we have to absorb this ridiculed state of mind. For example the thousand polling officers and presiding officers are engaged in election duty, how many of them are bold enough to make any protest? Then all of them are coward? Everybody knows that election is now a matter of muscle power. Capturing booths, rigging, casting false votes, to set fire on other's house all this are the sense of glory and credit to any party. We have to tolerate much more torture and ridicule behaviour in this age of rapid criminalisation of politics. If we take account of each and every aspect of this bad incidence then it would be foolishness.

"It is not possible for the sake of protest on each and every unjust activity to take life at risk. That question would arise when the protest would take shape of a continued organised effort. In that case we would dream of a beautiful future world where we would not care to sacrifice our life, we would not get fear to do that. You have fallen ill as you have make the protest in an inappropriate time and that is beyond your capacity. This fraction of small agitation and protest accumulate in our mind and gradually crystallizes into a colossal protest movement.

"Do you think it is possible? But a long time has passed that we could not find any answer of it? On the other hand their election machinery is gradually become more and more oppressive and powerful. Can you say where it ends?"

"My dear sir it is not true that we have not seen in the past this kind of horrible days. The era of Hitler did not last long, even the era of Tsar of Russia. In the history through ages as power has been centralised in the hands of political leaders or state administration so the

protest movement would gradually build up on the receiving end of people to crush the administration.”

The eyes of our teacher turn glittering “Can you say so? when this day will come?”

“Come it must. All of us are suffering from some social fear what we call it a social phobia. We are suffering from fear of going outside, fear to make any protest, fear to call a spade a spade. In any society in any time when the centralised, organised state power began to oppress people then a kind of social fear enmeshed our whole community. We love our life so we get scared and we do not want to lose it unnecessarily. We cannot live without honour or dignity so that we get scared if we lose it. All this accumulated fear once burst into a revolutionary protest. In history throughout ages the people who want to preserve this species is powerful enough to vanquish this power-hungry people. Do you not agree with me recapitulating the history of mankind?”

After this occasion our teacher has consulted me twice or thrice. He was relieved from this burden. Then he stopped coming. Perhaps he did not feel any necessity. He has intermingled in the mainstream. I hope one time courageous person like our teacher is now in sound health and mind. **P A S**

Book Review

Ramkrishna Bhattacharya, *Studies on the Carvaka/Lokayata*, Societa Editrice Fiorentina, Firenze 2009, EUR 28,00; Indian edition: Manohar Publishers, New Delhi 2010, Rs. 750.

Krishna Del Toso

Studies on the Carvaka/Lokayata (hereafter *S-C/L*) is a collection of 23 articles on various aspects of Carvaka/Lokayata (hereafter *C/L*) philosophy, written and published in several journals, mostly Indian, by Ramkrishna Bhattacharya during the last 15 years. This book not only represents the philosophical and cultural heritage received from Debiprasad Chattopadhyaya's and Mrinal Kanti Gangopadhyaya's works on Indian materialism – the scholars with whom Bhattacharya studied the C/L thought ; but it also sets out new perspectives, helping us to better define the import of C/L on Indian history of philosophy.

To start with, it can be noticed that C/L, against the suppositions of Eric Frauwallner (*History of Indian Philosophy*, vol. II, p. 216) and other scholars, seems to have had a popular, not royal, origin (Ch. 1) as the very term *lokayata* bears witness to: *lokesu ayatam*, “wide-spread among the people”. It is nonetheless likely to think that at least some C/L perspectives at a certain point were accepted by kings and courtiers: some sources refer that the C/L were well versed in the knowledge of Arthasastras and Nitisastras, the treatises on the rules for a good administration. In any case, notwithstanding its “popularity”, only few fragments of C/L works have reached us as quotations inserted in writings belonging to non-C/L traditions (Buddhism, Jainism, Vedanta, etc.); Ch. 6 presents and discusses the 18 C/L aphorisms, the 30 excerpts from C/L commentaries and the 20 stanzas which constitute all that we have at the moment of C/L original texts. However, as regards the stanzas, the majority of which are collected in Sayana-Madhava's *Sarvadarsanasamgraha*, Bhattacharya affirms that (*S-C/L*, p. 217): “It is impossible to accept his [i.e., Sayana-Madhava's] declaration that Brhaspati [the eponymous founder of Carvaka system] is the author of all these verses”, some of them being

apparently from Jaina works. Notwithstanding this paucity of material, from these fragments we are nonetheless able to outline the guidelines of C/L philosophy. (1) Only four elements are real (earth, water, fire, wind). (2) Perception is the principal means of right knowledge (*pramana*), whereas inference is accepted only if supported by perception (Ch. 4); the validity of the other means of right knowledge is rejected. In consequence of these two points, (3) the self (*atman*) as everlasting substance, (4) God as a being powerful in/on the world and (5) past and future lives depending on *karmic* retributions are not admitted (indeed they cannot be proved by means of the accepted *pramanas*). The non-acceptance of any supernatural power (God, *karman*, etc.) as intervening into human life makes the C/L found its ethical perspective totally on human effort (*purusakara*) and consequently deny the validity of the Vedic sacrifice.

In Ch. 5 we find a list of five commentators of the Carvakasutras, the only five that we know by name: Aviddhakarna, Bhavivikta, Kambalasvatara, Purandara and Udbhata Bhatta. Among these philosophers, the sources refer to Purandara as a compiler of both a *sutra* and a commentary (*vrtti*); Purandara's *sutra*-text has been commented in its turn by Aviddhakarna who compiled a work called *Tattvatika*, whereas Udbhata Bhatta wrote a commentary on the Carvakasutras called *Tattvavrtti*. All these philosophers flourished before the VIII century CE.

If, thus, the VIII century CE can be considered as the period in which C/L reached its – so to speak – final form (with further developments up to the XII century), the origins of C/L philosophy can be traced back to at least the V century BCE, with Ajita Kesakambala, a senior contemporary of Gotama Buddha. Bhattacharya shows that (Chs. II and III), even if it cannot be said with certainty that Kesakambala belonged to C/L tradition, from the accounts that we have on him it nonetheless appears quite clear that his philosophical perspective is to be regarded as at least a proto-Carvaka. This proto-Carvaka (and the subsequent C/L), founded on the theory of the existence of only four material elements represented just one school of materialism. Bhattacharya points out that other materialistic currents of thought were active in India. There existed for instance a school called of the *bhutapancakavadins* (those who believed in the existence of five elements), who added *akasa*, ether, to the admitted four material elements and who (*S-C/L*, p. 41): “are shown to be accidentalists (non-believers in causality) and hence inactivists, since human efforts are futile”.

Besides these distinctions among several materialistic streams, and as it occurs to all philosophies in themselves, C/L also presents internal doctrinal differences due to distinct lectures and interpretations of the basic *sutra*-texts, and to different conceptual directions assumed in dialectical disputations with other schools. The most important among these differences regards the nature of consciousness inferred from the interpretation of the C/L *sutra*: *tebhyas caitanyam*. According to the ancient thinkers (like Bhavivikta), consciousness originates from the mixture of material elements as the alcoholic degree originates from the mixture of juices, sugar, etc. Thus, *tebhyas* is to be intended in the ablative case: “from these, consciousness [originates]”. There is also a “modern” position (Udbhata Bhatta), which adumbrates some inclinations towards Nyaya and Vaisesika philosophies. According to this perspective, which interprets *tebhyas* as a dative, the *sutra* would mean “to these, consciousness [is manifested]”. In this second case, consciousness is seen as a material element, different from, but dependent on, the four basic elements (earth, water, fire, wind). Such internal dynamism is the clear signal of the deep interest that C/L had in finding adequate reasons for corroborating their fundamental ideas against the criticism of their opponents. This attentiveness towards logic and debate leads us to consider that C/L was not in primis a hedonistic school: as Ch. 9 shows, indeed, the half verse *yavaj jivam sukham jivet* (“while life remains

let a man live happily”), attributed to the C/L, induces to Hedonism only according to a misinterpretation; according to the context, indeed, the verse means that there is no bliss beyond this life, because beyond this life there is nothing, thus if one looks for happiness, s/he has to find it here and now. Moreover, as Jayantabhatta has pointed out, *sukham jivet* is not in itself a prescription, since all humans follow this in practice.

From Ch. 11 up to Ch. 15, Bhattacharya examines several texts dealing with C/L. In Ch. 11 we find an analysis of Santaraksita's *Tattvasamgraha* 22.1856-1870 and Kamalasila's *Panjika* thereon, which provide us with (S-C/L, p. 145): “(a) the names of three Carvaka philosophers, Aviddhakarna, Kambalasvatara and Purandara, (b) some extracts from their works, (c) the name of Aviddhakarna's commentary [i.e., *Tattvatika*], and (d) no fewer than eleven fragments from the Carvaka- or Purandara-sutra”. The fragments are collected in the above mentioned Ch. 6. In Ch. 13 a passage of Udayana's *Nyayakusumanjali: lokavyavaharasiddha iti carvakah*, is explained on the basis of textual and philosophical evidences. Bhattacharya argues that (S-C/L, p. 160-161): “Udayana intends to suggest that the Carvaka-s make God out of their insistence on perception: whatever is not and cannot be perceived in this world is rejected by them”. Thus, it can be underlined that according to Bhattacharya these – Santaraksita, Kamalasila and Udayana's excerpts – are good sources for the study of C/L.

In Ch. 12 the representation of the Carvaka in Jayantabhatta's *Nyayamanjari* is considered; Bhattacharya concludes that Jayantabhatta, who in several places falls in contradiction, for instance on the C/L doctrine of *pramanas* (S-C/L, p. 149-150), “in his polemics against the Carvaka-s does not help us to reconstruct the basic tenets of ancient Indian materialism. On the contrary, he has misrepresented the Carvaka view on inference” (S-C/L, p. 156). We find a similar conclusion of unreliability in Ch. 14, dealing with Hemacandra's treatment of C/L. Also Hemacandra seems to have misunderstood the real import of C/L philosophy as Bhattacharya notices (S-C/L, p. 172): “Hemacandra's stray remarks and comments on the Carvaka do not help us much in reconstructing the Carvaka system of philosophy [...]. What is transparent is Hemacandra's all-out antipathy to the materialist system”. It appears that the aim of these two authors was not to expound the C/L doctrines, rather primarily to deride them; therefore, for extracting the reliable information contained in their texts, philosophical forcings and inaccurate references have to be detected. Bhattacharya here, as elsewhere in this book, demonstrates to have been able to carry acutely out this task.

In Ch. 15 Haribhadra's *Saddarsanasamuccaya* is considered, particularly the parable of the wolf's footprint, as representative of the criticism of the belief in supernatural things (soul, gods, heaven, hell, etc.).

Then, three Chs. (16, 17, 18) on the meaning of the term *lokayata* follow, to which we can add also Ch. 10, where the significance of *lokayata* in Kautilya's *Arthashastra* is pointed out. From all these studies it appears that *lokayata* originally meant nothing but “disputation”, “dialectics”, etc, and not materialism. In Pali and Buddhist Sanskrit, for instance, *lokayatika brahmana* is used to refer to (S-C/L, p. 191): “one who is fond of disputation, hence criticized as one engaged in sophistry or casuistry”. Hence, we have to conclude, with Bhattacharya, that (S-C/L, p. 195) “Only later, but no much earlier than the fourth century CE, *lokayata* came to mean materialism [...]. What was common to the older Lokayata-s and the new Carvaka materialists was perhaps disputatiousness: nothing was sacred to them”.

Chs. 19-21 deal with three passages from the Carvaka chapter of Sayana-Madhava's *Sarvadarsanasamgraha*. It is interesting to note here how in Ch. 19 Bhattacharya demonstrates that the half stanza *yavaj jivam sukham jivet rnam krtva ghrtam pibet* (“while life remains let

a man live happily, let him feed on ghee even though he runs in debt”) has been concocted by Sayana-Madhava probably for decrying C/L thought, the original version attested by other sources (and by Sayana-Madhava himself in a previous passage!) being *yavaj jivam sukham jivet nasti mrtyor agocarah* (“while life remains let a man live happily; nothing is beyond death”). In Ch. 21 Bhattacharya suggests that at least one verse among those quoted by Sayana-Madhava and ascribed by him to Carvakas has to be considered as taken from Jain sources. This is another case in which Bhattacharya's sharp textual and philosophical analysis detects and unravels several problematic points, unnoticed by other scholars. With these chapters on Sayana-Madhava's *Sarvadarsanasamgraha*, Bhattacharya sheds light on the peculiar attitude of this medieval thinker towards C/L, that is, an apparent tension between the objective need of describing the C/L philosophy and the subjective inclination to discredit it.

Ch. 22 represents something new in the panorama of the studies on C/L, because it deals with the Perso-Arabic sources. Bhattacharya here analyses the following texts: al-Biruni's India, al-Shahrastani's *Ara'ahl al-Hind*, Abu'l Fadl-i-Allami's *Ain-i Akbari*.

In the last chapter of the book, which deals with the usage of the term *nastika* (“negationist”) in Vatsyayana's *Nyayasutrabhasya*, it emerges that Vatsyayana makes use this word for indicating both an absolute idealist who denies the reality of things, and a materialist who denies the validity of every imperceptible thing (as the *atman*, etc.). This, indirectly, should lead us to be cautious in interpreting the term *nastika* as referring undoubtedly to C/L, when it occurs in other contexts too. Let us take for instance into consideration *Manusmrti* 2.11, where the *nastika* is said to be a twice-born dialectician. Kullukabhatta, who comments in his *Manvarthamuktavali* this word by referring to Carvaka, seems to be completely wide of the mark because here the description of the *nastika* reminds us the above mentioned *lokayatika brahmana* of the Buddhist sources and by no means a C/L materialist.

To conclude, in his S-C/L Ramkrishna Bhattacharya examines an incredible number of sources, that speak, deal with or refer to C/L, with a critical disposition and a thorough attention, in this way restoring as far as possible the actual philosophical, historical and cultural horizon of this, now lost, Indian tradition. For these reasons, this book is, and will be, an important milestone in the studies on C/L. **P A S**

Book Review

My life as a Psychiatrist Memoirs and Essays

Ajita Chakraborty, Stree, Rupees 550.00

Finally Professor Ajita Chakraborty has written and published this book. Dr. Chakraborty, the most accomplished lady psychiatrist in India, has served in this state and our country for at least fifty years in the field of mental health and provided services to innumerable patients and imparted training to a lot of psychiatrists. So she has in mind that, “ 'Tis time to look about.” However this special book has the star attraction of the foreword written by prophetic philosopher of our time Dr. Ashis Nandy.

We, who are concerned with the mental health movement of our country was eagerly waiting for this book and felt a mixed reaction regarding fulfilment of our expectation. But it is needless to say that we have been much benefitted from this book. No psychiatrist of this country can claim this credit to write this kind of book in such a philosophical hue. Because it is noticeable

that she is enmeshed with the tension and chaos of her time. This book is the product of this period of tension. Some articles published erstwhile have been included in this collection and there are some essays that have been written in present mental state with past recollection. We should consider this documentation is the value premises of her long career of fifty, sixty years as a psychiatrist and it is live vibrant of a sensitive social mind. So we can infer that this documentation and analysis of her life-history though scattered and disseminated in some area but unique in a sense that it is flow or way of life of a representative character of Indian Psychiatric Society. Now it is the responsibility of her juniors to fill up the gaps of this grand narrative. Then this book should be of immense value. We are especially happy that she has changed her opinion and recognised Dr. Dhirendranath Gangopadhyay as she mentioned in this book. It is a fact that she had published a ridiculous letter against Dr. Gangopadhyay, without any reason in the year 1982, in the daily paper The Statesman. However that is a separate story.

She declares that she is a phenomenologist and existentialist. She had moral support for Indira Gandhi's Emergency. She is a Transculturist etc.. Moreover she almost hated the practice of receiving money in doctor's chamber from the ailing patients. You could find such type of numerous bold comments or statements scattered throughout this book. It is natural. She is an individualist and she develops in her lifestyle some preference and choice. We do not find any fault of her in it. But we are much more concern about what she has contributed to mental health movement in this country as a leading psychiatrist. Because when she has started her innings it was a difficult period of growth and development of our society especially in her field regarding mental health services. We were in very much felt need - 1. As regard to prepare a classification of mental diseases. 2. composing a textbook on psychiatry. 3. starting a movement on community psychiatry 4. building up a psychiatry institute with a beautiful library. 5. developing some unique methodology in clinical psychiatry practice. However it is a fact that her overall contributions to these items are negligible.

But we have much benefitted from this book. Because 1. She has narrated almost in an objective style the innumerable hurdles she had to face being a woman and she has to surpass all this obstruction in our backward feudal society structure. 2. The resistance she has to face to streamline and to make corruption-free Indian Psychiatric Society as a transparent body of the psychiatrists. 3. The difficulties and discrimination she had to face in her service life. 4. From her narratives we come to know the socio-economic-cultural situation of a time-space continuum and some unknown horizon of her society unfurled in front of us.

She is very much sensitive and straight-forward but regarding personal integrity, honesty, morality, ethics, values she is very much rigid. She has made some comments regarding her experiences about people at large. One of the comments is shocking and difficult to stomach and we are astonished, how it becomes possible being a psychiatrist she has made such comment. It is a fact that people with various mental state and various difficulties would come to her for professional help. How it is possible that with this world outlook she has given psychiatric services regularly throughout her life to her patients. She writes, "...I have in my life seen little of goodness; things and people in my experiences were mostly bad." (p103)

She has documented this message in her book and her innumerable juniors would learn it from her that people are mostly bad of nature. So we have to say that as she had maintained a lifestyle of upper echelon so she did not bother to know our society at large and especially regarding utterly poverty-stricken people. She should know that it is ridiculous to expect aesthetic values or any kind of greatness from a person who is maintaining a beastly life. The exact situation happened to her when in her service life once she has been transferred to Burdwan

Medical College. She has described her horrible experiences. As if she was forever beggared of peace and joy. We are fortunate that she has not been transferred to North Bengal Medical College or she has not been posted in a jail to give service as a psychiatrist for long twenty five years. So fortunately we do not have to face more wrath and hatred against man.

Nevertheless reading her numerous contradictory comments regarding ethics, moralities and values one can easily assumes that she is confused. In some point she quotes Rabindranath as she wants to keep faith on man as it can shake the world. Though she does not believe that there is something called 'ideal' and man can sacrifice everything to maintain his ideal. However sometimes she admonishes to her students in this word, "Caution should be your watchword in this perilous venture, surrounding evils."

Her hatred toward private practice of the psychiatrist especially those who are in the government service worth mentioning. She almost hates this practice and she has developed a mindset that these people who indulge this professional practice are bad people. They neglect their jobs and they mint money using their institutional support. We cannot deny the fact but unfortunately she also failed to create any ideal situation or arrangement in her working place so that nobody does feel the urgency to seek a private consultancy. Even the services provided in the hospital outdoor by herself or by her team were not at all satisfactory by the usual standard. So it is an ever increasing demand on the part of the affluent patients to get service from a private consultancy.

It is a fact that a section of our population is affluent and they want to be treated by more facilities even in exchange of a good amount of money. They want their doctor should give patient hearing, enough time. They want counselling. They want psychotherapy. They want more supervision from a psychiatrist or psychologist. But there is no system to treat such a huge number of neurotic patients or persons suffering from minor psychiatric disorder. There is no institutional set up in the state hospitals to provide services in the field of counselling and psychotherapy. On the contrary these huge patients, finding no other way are overcrowding one chamber to another without any significant result. Actually our state mental hospitals are habituated to use a rubber stamp of few medicines in successive dates. We are not avoiding our overall responsibility. It has a long history for this dismal condition and all of us are responsible for this horrible situation. The poor, helpless people who have no other way out are overcrowding these state hospitals.

It is worthfull to mention that Dr. Dhirendranath Ganguly regularly performed psychotherapy and counselling to his patients since 1950's but unfortunately he was designated as a 'Shaman' to this so called educated community. However now this erudite community has changed their outlook. They admit that there is no other way except treating by psychotherapy and counselling to help this huge number of neurotic patients. But the present state of affair of providing mental health services in our state hospitals is in a miserable condition and it is not an easy task to set this chaotic condition in order in a stroke. To provide an alternative system to this tottering condition we have to think of community psychiatry. Unfortunately Dr. Chakraborty has not even mention this most valuable item in her book. Like many of her contemporaries, community psychiatry is just like some theoretical common questions necessary to be kept in rote memory useful only in the examination hall. This is the most unfortunate thing of our science-culture, total lack of social consciousness in every sphere of our mindset regarding social service.

However in spite of some imperfection this is a must reading for all her students and juniors especially those who want to know history of growth and development of our mainstream psychiatry. This book will provide a lot of information and ignite us with various ideas and opinions and satisfy our curiosity.

Here one thing we have to note that she has not mention even for once the role of 'poverty' regarding the bad quality of life of the subalterns who mostly suffer from various psychiatric illnesses. As it is evident that our psychiatry patients who are poorest of the poor, margin of the margins, utterly helpless creatures and are always at the mercy of others. It is our solemn expectation that a witty, learned, having the qualification of a connoisseur, cultured, intelligent, skilful, clever psychiatrist like Professor Chakraborty would not forget that misery thy name is poverty, brutality thy name is poverty, inhumanity thy name is poverty, violence thy name is poverty, painful existence thy name is poverty and phenomenology thy name is poverty. However we expect that in the next edition of this book she should consider our appeal.

Basudev Mukherjee

P A S

Dr. Dhirendranath Ganguly Memorial Lecture, 2010

The fifth Dr. Dhirendranath Ganguly Memorial Lecture was delivered at the Bangla Academy, Kolkata on 4 December, 2010 at 5 p.m... This lecture has become quite an annual intellectual feast in the city. This year, the speaker was the well-known professor of economics and essayist Prof. Sourin Bhattacharya whose Bengali book on Tagore has recently won the Sahitya Akademi award. His chosen topic was violence. The title of the lecture, delivered in Bengali, was *Ron, Rakta, Saphalata* (War, Blood, Success), a phrase borrowed from a famous Jivanananda poem. The lecture was attended by a sizeable and eager audience who responded by raising one question after another - so much so that all the questions could not be handled by the speaker within the stipulated time. The discussion continued over the tea arranged after the lecture.

The function began with a Tagore song (Je Dhruvapada Diyecho Bandhi) sung by our member Sutapa Thakur. In his introductory speech Dr. Basudev Mukherjee reminisced on Dr. Ganguly, narrating how the Marxist savant had delved deep into the problem of violence both from a psychiatric and a sociological angle. Next, Ashish Lahiri said that Dr. Ganguly was a champion of a kind of 'undifferentiated culture' that could act as a built-in antidote to violence, both innate and externally stimulated. Dr. Tushar Chakraborty, a molecular biologist and popular science-writer, introduced Prof. Bhattacharya, giving a brief introduction of his impressive academic and literary achievements.

Then Prof. Bhattacharya, suave and soft-spoken, took over. He regretted that though for many years belonging to a circle that was very close to Dr. Ganguly, he had never met the latter personally. He cautioned the audience that they should not expect any ready-made solutions from him. Rather, he would raise certain problems of 'methodology'. Although he refused to give a categorical definition of violence, he broadened the term not only to mean direct physical or mental assault, but to include any kind of coercion, even the slightest bit. For example, violence consisted not merely in beating a child at school, but also in burdening them with the load of 'home task' against their will. Discussing some issues of philosophy of science, he opined that science, by virtue of its very 'success' via technology, tended to lord it over other disciplines like humanities. Science, in the name of the juggernaut called success, was being forced on minds that were more suited for other pursuits. Did not that

amount to a negation of the individual's freedom? And again, was not war the most ghastly form of success-driven violence, with science as its comrade? Thus, science, once believed to be the deliverer of humankind, was itself a slave to violence. He characterised Popper, with his celebrated principle of falsifiability, as 'too nice and prim' to be inclusive enough in this regard. Stretching his point further, he went to the extent of saying that even in a true democracy, the majority imposed its will on the minority, may be with perfectly noble intentions. Here he was not concerned with the intention, but with the method: how, at many points, human beings collectively or individually coerced others.

Naturally the gender question came up in a big way in his speech, which he half-read from a prepared text and half discussed spontaneously. Touching on the relation between ethics and the all-enveloping violent 'method', as understood and expanded by him, he confessed that his position might be challenged from the practicability point of view. For example, he would prefer a social system where nothing, absolutely nothing, and either 'good' or 'bad', was forced upon any individual: but then, what about social reforms? Should not reformers be allowed to coerce the harmful group either to change their ways or to accept punishment? He cited the example of the polio vaccine campaign. Some people, for whatever reasons, refused to participate. Should the state have used force to compel them to? Rather reluctantly, he said, no it should not; it should rather wait till there is no opposition.

Should not guardians be allowed to admonish their aberrant wards? If not, will that itself not constitute an injustice, which was tantamount to violence in Prof. Bhattacharya's nomenclature, to the child, who, unknowingly, might develop a wrong habit that might affect his well being in life? These are tricky questions and he admitted that he was not ready with fool proof answers. In answer to a question, he categorically said there was no violence in nature, not even in the animal world in the sense that he understood the term. For there is no place for 'success' in nature; there was only need. If the predator's need, determined naturally, was satisfied by killing the victim; that was not violence in this sense. In other words, his idea of violence was largely cultural and anthropological, in as much as the idea of success is so.

A very interesting point that he did not elaborate much was the debate in Tagore's *Bisarjan* between Raghupati and Jaisingha. The former, the guru, tries to persuade the latter, the chela, that slaughter (hatya) was inherent in nature; but never for a moment does he mention the word violence (hingsa). The obvious conclusion was that only a world that was not success-mad and success-fed, that did not consciously sacrifice mankind's natural instincts at the altar of consumerism, that did not finish off a forest in order to produce a vulgar and glossy magazine, could really be free from violence.

Was not this idea utopian, even inactivating? For it did not address the crying question of dealing with the present problems - even pathological and psychological problems - that day in and day out breed and call for violence? He said he did not know, but guessed many people would construe it like that.

The highly animated and provoking interaction ended on an inconclusive note, as he had predicted at the beginning. But at the same time it was extremely stimulating, allowing as it did the listeners to look at known problems from entirely new angles. It was in this mood of stimulated animation that the audience thanked Prof. Bhattacharya heartily. P A S