

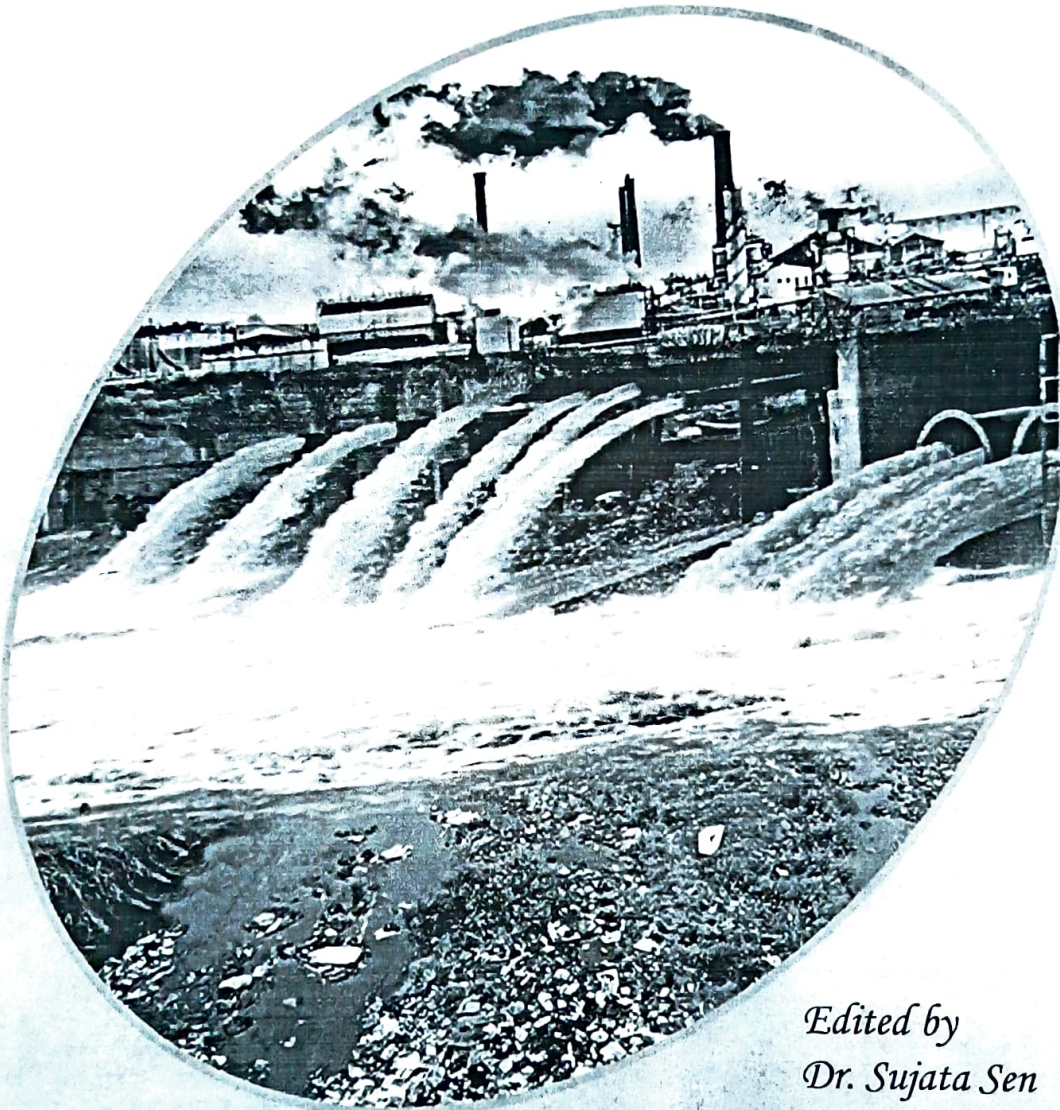
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PROCEEDINGS VOLUME
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NATIONAL SEMINAR
ON
**IMPACT OF POLLUTION : ASSESSMENT,
AWARENESS AND PREVENTION**

In collaboration with
OOZARU, NGO, LUMDING

28th and 29th June, 2017



*Edited by
Dr. Sujata Sen
Dr. Nibedita Dutta
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"EFFECT OF AIR- BASED POLLUTION ON LIVING THINGS"

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ABSTRACT

Air is said to be polluted when the amount of solid wastes or concentration of gases increases in the air disproportionately to such an extent that they cannot be tolerated by air. In other words, air is polluted when it is contaminated by poisonous gas, smoke, fly ash, fuel, malign water, industrial chimney wastes, carbon-dioxide, carbon monoxide, sulphur, nitrogen oxide etc. and the air becomes unfit for living organisms. The carbon monoxide is significant gaseous air pollution which is harmful to human health. As a result of which heart palpitations, pressure in chest and difficulty in breathing occurs. Another pollutant sulphuric acid causes many respiratory diseases in man and also produces acid rainfall over parts of the earth. The chief industrial sources of hydrogen sulphide are users of sulphur containing fuels. It causes headache, nausea, collapse, coma and final death. Nitrogen oxide and secondary pollutants are harmful to both man and animals, which causes dryness of the throat, headache and difficulty in breathing. Dust air pollution lead to diseases like allergic asthma bronchitis and fibrosis of the lungs. Pollution based air with cadmium causes hypertension, emphysema and kidney damage. The several types of air-based pollution can be controlled by employing modern technology and scientific researches. It involves the benefits to improve the quality of the environment and human health, agriculture, vegetation. Education can also play a significant role in the prevention and controlling air pollution.

Key words : Sources of air pollution, types of air pollution, effects of air pollution, control and prevention of air pollution.

1. INTRODUCTION :

Air is said to be polluted when the amount of solid wastes or concentration of gases increases in the air disproportionately to such an extent that they cannot be tolerated by air. In other words, air is polluted when it is contaminated by poisonous gas, smoke, fly ash, fuel, malign water, industrial chimney wastes, carbon-dioxide, carbon monoxide, sulphur, nitrogen oxide etc. and the air becomes unfit for living organisms.

2. SOURCES OF AIR POLLUTION :

There are a number of sources of air pollution. The various sources of air pollution can be divided into two categories. They are :

1. Natural sources
2. Man-made sources

1. **Natural sources:** Natural sources of air pollution include volcanic eruptions releasing dust and gases into the atmosphere, acid rain polluting the air, forest, fires releasing spores into the air, sea-salt crystals causing air pollution etc.

2. Man-made Sources:

- (a) Industries
- (b) Combustion- fuels like coal, wood and petroleum etc. Combustion releases smoke oxides of sulphur, carbon monoxide into the air which causes pollution. (c) Use of Pesticides.
- (e) Excessive use of fertilizer in agriculture.
- (e) Radio -active materials such as nuclear wastes, explosion, hospital wastes etc.

These causes effects human, plant and animal life.

From the different sources of air pollution, a variety of pollutants are released into atmosphere. The air pollutants emitted from these different sources are as follows :

1. **Carbon compounds:** These are mainly carbon dioxide and carbon monoxide, the former released by complete combustion of fossil fuels and the later by automobile exhausts.
2. **Sulphur compounds:** These include sulphur dioxide, sulphuric acid, hydrogen sulphide mostly released by fossil fuel (coal, etc.) based power generating plants (thermal plants) and industrial units as refineries.
3. **Nitrogen oxides:** These include chiefly nitrogen monoxide, nitrogen oxide mostly released by automobiles, power plants and industries.
4. **Ozone:** Its level may rise in atmosphere due to human activities.
5. **Fluorocarbon:** These come from industries, insecticides spray etc.
6. **Hydrocarbons:** These are chiefly benzene discharged by automobiles and industries.
7. **Metals:** These include chiefly lead, nickel, arsenic, beryllium, tin, vanadium, titanium, cadmium etc., present in air as solid particles or liquid droplets or gases. They are produced mostly by metallurgical processes, automobiles, seaspray etc.

3. TYPES OF AIR POLLUTANTS AND THEIR HARMFUL EFFECTS:

A brief description of harmful effects of air pollutants can be described as follows -

1. **Carbon Compounds:** The carbon monoxide is significant gaseous air pollution which is harmful to human health. It is mainly released from gasoline engines and burning of coal and power thermal plants or factories. It combines with haemoglobin in human blood. Nervous system is affected at 2 or 5 percent level. At more advanced stage nausea ringing in the ears, heart palpitations, pressure in chest and difficulty in breathing occurs.

The carbon dioxide and carbon monoxide are the two main carbon compounds which have the adverse or damaging effect on human life as well as quality of the environment.

2. **Sulphur Compounds:** One of the common gaseous air pollutant which is known to be harmful to human health is sulphur dioxide. It irritates the respiratory epithelium and impairs normal breathing. Sulphur dioxide also causes increase in cough, eyes irritation and headache in human beings. When there occurs severe pollution of sulphur dioxide, the death rate and bronchial asthma are increased.

Sulphuric acid causes many respiratory diseases in man and also produces acid rainfall over parts of the earth. When plants exposed to atmospheric sulphur, they are injured or killed outright. The chief industrial sources of hydrogen sulphide are users of sulphur containing fuels. It causes headache, nausea, collapse, coma and final death. The increase of sulphur compounds in the atmosphere is also harmful to plants and animals.

3. **Nitrogen Oxides:** The nitrogen oxides are most important gaseous air pollutants which arise

due to burning of fossil, fuels in automobiles and power plants.

Nitrogen oxide and secondary pollutants are harmful to both man and animals. Nitrogen oxide a pungent gas that produces a brownish, haze, cause nose and eyes irritation and pulmonary discomforts. The higher concentration of this gas causes dryness of the throat, headache and difficulty in breathing. Ozone and nitrogen oxide severely injure many forms of plant life, destroy the cells of leaves, damaging the chloroplasts and interfering with plants metabolic process. It is also true that the ozone layer in the stratosphere protects us from the harmful ultraviolet radiation from sun. The atmospheric ozone is now considered as potential danger to human health and crop growth.

4. **Dust pollution:** The dust air pollution is harmful to human health and it may lead to diseases like allergic asthma bronchitis and fibrosis of the lungs.

The dust air pollution can be controlled by certain evergreen plants, grasses and epiphytes like orchids. Certain plants are better dust collectors.

5. **Benzene:** A liquid pollutant is emitted from gasoline. It causes lung cancer.

6. **Mercury:** A liquid volatile metal is present in air as a result of human activities as the use of mercury compounds in production of fungicides, paints, cosmetics, paper pulp etc. Symptoms of mercury toxicity are liver and eye damage, headache, fatigue, anxiety, lethargy, loss of appetite etc.

7. **Cadmium:** It occurs in air due to industries and human activities. Cadmium is poisonous at very low levels and is known to accumulate in human liver and kidney. It causes hypertension, emphysema and kidney damage.

Adverse effects of air pollution :

Air pollution causes several kinds of damages to man, animals and plants.

1. Air pollution has very serious types of pathological effect on man. It causes several types of disease to man.

2. It causes obstruction to vision of pilots and have caused air craft accidents.

3. Air pollution has damaged both agricultural crops and natural plants.

4. There has been injury to agricultural live stocks, particularly from air borne fluoride and arsenic pollution.

5. The increased amount of carbon dioxide in atmosphere causes to increase the temperature of earth. It is known by the phrase 'Green house effect'. It also tends to prevent the long wave radiations from earth. Thus it has atmospheric effect. The intensity of radiation will cause skin cancer.

4. CONTROL AND PREVENTION OF AIR POLLUTION :

The several types of pollution can be controlled by employing modern technology and scientific researches, but the cost to be borne by the public in the form of higher prices for manufactured goods, higher taxes, reduction of profit margins in industry and more restriction on human activities. It involves the benefits to improve the quality of the environment and human health, agriculture, vegetations. It will also improve the ecological balance and stability of ecosystem.

The main sources of air pollution are- 1. Automobiles 2. Industrial development 3. Power plants -coal based and thermal power plants.

Air pollution by automobiles can be controlled by following measures - a. To check pollutants emission from vehicular exhaust. b. To control evaporation from fuel tank and carburetor. c. To use the filter and d. To control through law.

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COAL MINING AND ENVIRONMENTAL POLLUTION, JAINTIA HILLS, MEGHALAYA - AN OVERVIEW

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2. Asstt. Prof. Deptt. of Geology, Lumding College, Lumding.

ABSTRACT

The unscientific, unplanned and haphazard mining in the Jaintia Hills of Meghalaya has caused large scale damage to the environment particularly from the pollution point of view. Research has been carried out in coal mining areas of Jaintia Hills of Meghalaya by various research workers including the present author (Bapung area of Jaintia Hills, Meghalaya). The present paper deals a comprehensive research details of Environmental pollution of Jaintia Hills. Large-scale exploitation of coal mining has resulted into serious land degradation. Degradation of agricultural and non-agricultural land, decline in biodiversity, pollution of air, water and toxicity in plants and scarcity of animal fodder are the most obvious effects of mining in the area. The most important impact of mining is on water as the coal of the area contains high sulphur (4%-5%). The water which seeps out from various coal mines of the area are highly acidic and contains heavy metals like Cu, Zn, Mn, Pb and Se. The Trio-component of environment (air, water and land) are seriously/variably affected by coal mining which needs proper attention.

Key words : Coal Mining, Environment, Pollution, Sulphur, Water.

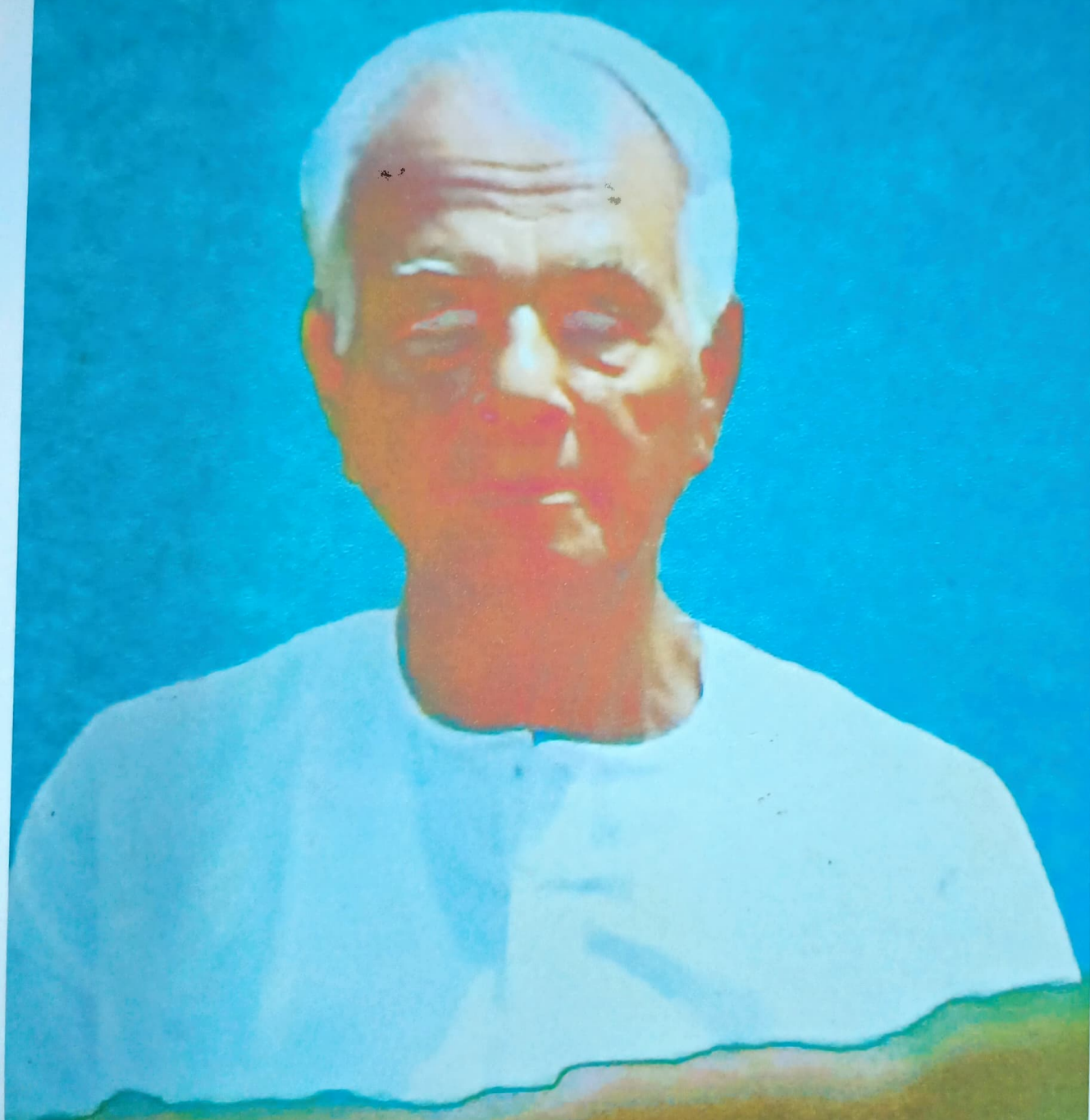
1. INTRODUCTION :

Coal is the world's abundant fossil fuel. Coal is the most important and abundant fossil fuel in India. With increased population, growing economy and a quest for improved quality of life, energy demand in India is rising. Mining is not only fulfilling the increasing energy demand of industry, but also plays an important role in the economic development of the country (Chaulya and Chakraborty 1995). Power sector is the largest consumers of coal followed by iron, steel and cement segments in the last four decades. Coal mining and its utilisation is associated with substantial environmental challenges as it creates significance and often irreversible impacts upon the terrestrial and aquatic environment.

The coal deposits in the Jaintia Hills occur along the southern fringe of Shillong plateau. The coal is one of the extensively utilized minerals in the Jaintial Hills. Jaintial Hills District is a major producer of coal. Sutnga, Lakadong, Musiang-Lamare, Khliehriat, Ioksi, Ladrymbai, Rymbai, Bapung, Jarain, Shkentalang, Lumshnong and Sakynphor are the areas of extensive coal mining in the District. Coal extraction is done by primitive mining method commonly known as 'rat-hole' mining. Most of the mining activities are small scale ventures controlled by individuals who own the land. Mining operation, undoubtedly has brought wealth and employment opportunity in the area, but simultaneously has led to extensive environmental degradation and disruption of traditional values in the society. Environmental problems associated with mining have been felt severely because of the region's fragile ecosystems and rich biological and cultural diversity. Large scale denudation of forest cover, scarcity of water, pollution of air, water and soil and degradation of agricultural lands are some of the conspicuous environmental implications of coal mining (Das Gupta and Tiwari, 2000; Swer and Singh, 2004). Besides, a vast area has

শ্রদ্ধাৰ সাধক

ড° শ্ৰফুল কটকী



ব্যক্তিত্ব আৰু কৃতিত্বৰ সৌৰৰণ

Prajnar Sadhak Dr. Prafulla Kotoky

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Late Dr. Prafulla Kotoky, published by Dr. Prafulla Kotoky Memorial
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ড° প্ৰফুল্ল কটকী**

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পৰিশিষ্ট

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- (৩) 'দৈনিক জনমভূমি'ৰ সম্পাদকীয় ♦ ৪০৮
- (৪) অসম সাহিত্য সভাৰ শোক প্ৰস্তাৱ ♦ ৪১০
- (৫) অসম বিধানসভাৰ অধ্যক্ষৰ শোক বাৰ্তা ♦ ৪১১
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- (৮) বংশ পৰিচয় ♦ ৪১৪
- (৯) চমু জীৱনপত্ৰী ♦ ৪১৫

ড° প্রফুল্ল কটকীৰ একাংশে দৈনিক দেহৰ প্ৰহাৰ ♦ ৪১৭

অসমীয়াসৈ অনূদিত একাংশে দেহৰ প্ৰহাৰ ♦ ৪১৮

ইংৰাজীসৈ অনূদিত একাংশে দেহৰ প্ৰহাৰ ♦ ৪২০

স্মৃতিৰ দুখীয়া হৰি ♦ ৪২১

জন ষ্টেইনবেকৰ The Perl অসমীয়া অনুবাদ 'মুকুতা' এটি চমু আলোচনা

দিনীতা বৰুৱা

অনুবাদৰ জৰিয়তে আমি দেশ-বিদেশৰ সাহিত্যৰ সৈতে পৰিচয় হ'ব পাৰোঁ। বৰ্তমান অসমীয়া সাহিত্যৰ জগতখনতো অনুবাদ কৰ্মৰ গুৰুত্বপূৰ্ণ স্থান লৈ কৰিবলগীয়া। ইংৰাজী সাহিত্যৰ অধ্যাপক, লেখক, সমালোচক ড° প্রফুল্ল কটকীসেৱে বিশ্বপ্ৰসিদ্ধ বহুকেইখন গ্ৰন্থ অসমীয়া ভাষালৈ অনুবাদ কৰি অসমীয়া ভাষা-সাহিত্যৰ ভঁৰাল চহকী কৰি থৈ গৈছে। নোবেল বঁটাৰে সন্মানিত মাৰ্কিন ঔপন্যাসিক জন ষ্টেইনবেকৰ 'The Perl' নামৰ উপন্যাসখন তেখেতে 'মুকুতা' নাম দি অসমীয়ালৈ অনুবাদ কৰে। এই উপন্যাসখনৰ এটি চমু অৱলোকন আমাৰ এই প্ৰবন্ধটিত দাঙি ধৰাৰ প্ৰয়াস কৰা হৈছে।

মানুহৰ জীৱনলৈ হঠাতে অহা সৌভাগ্যই কেতিয়াবা কেনেকৈ দুৰ্ভাগ্যৰ ৰূপ লয় তাৰেই এক কৰুণ কাহিনী উপন্যাসখনত সংবেদনশীলতাৰে অংকন কৰা হৈছে। অনুবাদকৰ ভাষাৰে— "মুকুতা হ'ল ঘূৰাই ঘূৰাই পঢ়িবলগীয়া আৰু মনৰ মণিকোঠাত সযত্নে সাঁচি ৰাখিব লগা এক মৰ্মস্তূদ কাহিনী।"

মেক্সিকান লোককাহিনী এটিৰ দ্বাৰা অনুপ্রাণিত হৈ জন ষ্টেইনবেকে 'The Perl' উপন্যাসখন ৰচনা কৰিছিল। মানৱীয় প্ৰমূল্যবোধক অন্তৰ্গত কৰুণ উপন্যাসখনত উপস্থাপন কৰা হৈছে। অভাৱ হ'ল মানুহৰ গোপন শত্ৰু। বাহ্যিক ৰূপত ই দৃষ্টিগোচৰ নহয় যদিও মানসিকভাবে ই মানুহ একোজনক প্ৰায়েই অস্থিৰ আৰু বিভ্ৰান্ত কৰি তোলে। উপন্যাসখনত অভাৱগ্ৰস্ত পৰিয়াল এটাৰ জীৱনলৈ হঠাতে অহা দুৰ্যোগৰ কাহিনী বৰ্ণিত হৈছে। পাৰ্থিৱ ঐশ্বৰ্য লাভৰ সপোন কিদৰে মানুহক দিক্‌ভ্ৰান্ত কৰে, ঈৰ্ষা-অসূয়া আদি ঋণাত্মক প্ৰবৃত্তিয়ে কিদৰে মানুহক অমানুহ কৰে তাৰ চিত্ৰও উপন্যাসখনত সুন্দৰকৈ অংকিত হৈছে। শ্ৰেণীবৈষম্য মানৱ সমাজৰ প্ৰাচীন পৰম্পৰা। শোষক আৰু শোষিতৰ মাজত চলি থকা দ্বন্দ্বই কিদৰে মানুহৰ সুখ-শান্তিত ব্যাঘাত জন্মায়, তাৰ ছবিও উপন্যাসখনত অংকিত হৈছে। সাধাৰণ মানুহে ধন-সম্পত্তিকে সুখৰ মূল চাবিকাঠি বুলি বিশ্বাস কৰে। কিন্তু বাস্তৱত ইয়াৰ ওলোটো।