

TREASURES OF THE SEA

(Script & Research)

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English Translation: Ratanawali Mitra

- Suryapraksh - Hey/Hi Vivek, where've Srishti and Manav gone ? For a long time the two have been going on about how hungry they were...
- Vasudha - And now that the food is ready, there's no sign of them !
- Vivek - Mummy, they could be on the terrace.
- Suryaprakash - May be the two of them are flying kites.
- Vasudha - Vivek, please call them- food is ready.
(Sound of climbing stairs).
- Vivek - (In a raised voice) Manav, Srishti.... food is ready, please come down.
- Manav & Srishti - (answer together)... coming, Bhaiya.
(sound of foot steps coming down the stairs).
- Suryaprakash - O, come, children, the food is going cold.
- Manav - Wow ! Methi paranthas !
- Srishti - There's halwa as well; Manav.
- Vasudha - And coconut chutney too !
- Suryaprakash - Come on, let's start.
- Vivek - But...but...why's the chutney tasting a little peculiar ?
- Manav - May be mummy forgot to put salt in it.
- Suryaprakash - Yes, you're right children, its because there's not enough salt that the food is tasting peculiar.
- Srishti - Have you run out of salt, mummy ?

- Vivek - Well, we'll soon run out of salt as Manav always takes some salt on his plate...
- Srishti - Yes, and doesn't seem to need it,.... he seems to waste the maximum amount of salt at home.
- Manav - Salt is so cheap and yet you're making such an issue of it. The smallest part of papa's salary is spent on salt.
- Vasudha - Yes, why're you folks bothering my son for such a thing as salt ?
- Vivek - Mummy, it is salt which shook the British govt. in 1930. Salt is a powerful commodity.
- Manav - How can you say that, Bhaiya ?
- Vivek - Manav, in 1930 Mahatama Gandhi undertook the Dandi march and challenged the salt law.
- Srishti - Bhaiya, I don't understand why did so great a man as Mahatma Gandhi choose salt of all things for his struggle against the British Empire ?
- Vasudha - Beta, that's because we all use salt. The British govt. had passed a law according to which only the govt. could trade in salt - no ordinary citizen, could produce salt.
- Srishti - You mean, everybody would've to pay for salt and that too at the price decided by the govt.
- Manav - Which means that a good part of anybody's income would go in buying salt.
- Suryaprakash - Not just that, the salt Satyagraha was something in which the common man would participate.

- Manav - So, did Gandhiji succeed ?
- Vasudha - Not only did he succeed, after the salt satyagraha, the struggle for freedom gained momentum.
- Srishti - And it ended only with India obtaining independence on the 15th of August, 1947...isn't that right, papa ?
- Suryaprakash - You're right, Srishti, but you know its not just the Dandi march but the very word 'salary' shows us the importance of salt.
- Manav - Papa, but what does the word salary have to do with salt?
- Suryaprakash - Manav, the word 'salary' is derived from the Latin word 'solanum' which means a salary in the form of salt. In Rome, salt used to be distributed in the form of salary and that is why, it's believed that the English word salt really has its origins there.
- Manav - Which means that salt has a special significance for the salaried people.
- Srishti - Why only those in service, the rich and the poor... salt is essential for everybody.
- Mummy, we could go on talking about salt but we can't take this chutney without salt.
- Vasudha - Here, take this, just sprinkle some salt on top.
- [sound effect of sprinkling salt].
- Vivek - Yes...adding salt has really made a difference to the chutney.
- Manav - But, bhaiya, why is salt so cheap then ?
- Srishti - Manav, would you wish to make it expensive ?
- Manav - No, didi, what I mean is, where does so much salt come from ?

- Srishti - You dud, don't you know it comes from the waters of the sea.
- Vivek - Yes, Manav, the sea is the biggest source of salt ?
- Manav - But not everybody lived close to the sea - what did people do in the olden days ? Where did they get their salt from ?
- Srishti - They had to buy salt, that too at very high prices.
- Manav - Well, then they would have to spend a major part of their salary just buying salt !
- Srishti - Papa just told us how in Rome, a part of the salary was paid in the form of salt.
- Suryaprakash - We've had enough of salt, take the halwa while its still hot.
- Vasudha - Its all very tasty - but please don't overeat.
- Manav - Yes, papa, we're planning to go out, aren't we ?
- Suryaprakash - We'll certainly go, but first decide on the destination.
- Vivek - Yes papa. After all this talk about salt... we could visit the exhibition on the 'Treasures of the sea'.
- Srishti - Bhaiya, you mean the mobile exhibition organized by the Deptt. of Ocean Development ?
- Vivek - Yeah, Srishti, these days the exhibition is in our town.
- Manav - So, papa, let's go and see the exhibition, 'Treasures of the sea'.
- Suryaprakash - Yes, definitely but let me just take a short nap... after that, we'll go.
- [Change Over Music].
- Srishti - Oh, dear, its so crowded here.
- Vivek - Everybody seems to have come here to the exhibition.

- Vasudha - Let's decide papa, there are four galleries here... which one should we go to first ?
- Manav - Mummy, let's first go to the one on the coastal regions and its resources.
- Suryaprakash - That sounds logical... the sea shore and then the deep sea !
[Everybody laughs].
[Sound of everyone laughing]
- Manav - Hey, they've given a great deal of useful information on the sources of rivers, sand dunes and mangrove vegetation here.
- Suryaprakash - Manav, we get a huge amount of sand and a variety of minerals from the sea coast. Thorium and silicon are two such examples.
- Vasudha - Sand I know, but mangrove vegetation...
- Vivek - Manav, these plants have the unique capacity to survive in saline waters.
- Srishti - The mangrove plants are also unique as their seeds sprout on the plant itself.
- Suryaprakash - Nature has a unique way of giving every variety of plant or animal an equal opportunity to survive.
- Srishti - Let's move on and see what other treasures or curiosities are to be found in the sea.

(sound of foot steps)
- Manav - Bhaiya, why has a photograph of Tsunami been put up here ?

- Vivek - Manav, don't you know that mangrove plants reduce the effect of Tsunami and cyclones. These plants act like a natural wall along the coastlines.
- Manav - Which means that the mangrove forest blocks the intensity of the Tsunami even before it reaches the coast.
- Srishti - Yes, Manav, mangrove forests are vital in protecting us from natural disasters like the Tsunami. And of course, their wood is useful as fuel wood and in making furniture.
- Vivek - A large number of wild animals and birds also inhabit the mangrove forests.
- Suryaprakash - Children, a large number of tigers live in India's Sunderbans, which is a mangrove forest.
- Srishti - Manav, I think you should stay away from these forests, or we'll find you chicken-hearted when you come face to face with a tiger.
- (Everyone laughs)
- Vasudha - Children, come here, see these pictures, its been shown how salt is extracted from the sea. Look, first the water evaporates and these chunks are formed.
- Manav - To me this looks like a crop of salt and these chunks of salt look like Sugar crystals.
- Srishti - Yes, but these are not sugar crystals- they're chunks of salt.
- Vivek - Manav, these chunks are then ground to make salt.

- Suryaprakash - Children, these days salt is ground from such chunks after removing the dirt from them.
- Vasudha - At some places while packing the salt, iodine is mixed with them.
- Manav - Iodine...?
- Srishti - Manav, iodine is a very important element for the proper functioning of our body. Marine plants are a good source of iodine.
- Suryaprakash - Come on, children, let's move on, there's lots to see here.
(sound effect of the family walking ahead)
- Vivek - Wow, here the exhibit is about the salinity of the sea.
- Srishti - Well I know that the average salinity of the sea is 35gms. per litre.
- Suryaprakash - Children, sodium chloride alone contributes 80% to the salinity of the marine water.
- Vivek - Manav, the waters of the sea contain many salts like calcium, magnesium etc.
- Srishti - Papa, let's look at the living resources of the sea.
- Suryaprakash - Yes, of course, let's go there (sound of footsteps)
- Manav - Aren't they pretty - these colourful fishes ?
- Vasudha - The fishes of the sea are far more colourful than these pictures.
- Manav - More beautiful than these ?
- Vivek - Yes, Manav. There are thousands of species of fish in the marine waters.

- Suryaprakash - You know, don't you, children that fishes are a good source of protein ? In fact, majority of the people in the world get their protein from marine plants & animals.
- Srishti - O. K. then tell me Manav, which is the largest living being on earth ?
- Manav - (in a raised voice) Blue whale !
- Srishti - Hey, you know it !
- Vivek - Srishti, Manav has looked at the exhibit in front of us and then answered.
- Srishti - (laughing) I was wondering how our dumbo has suddenly become so smart !
- Vivek - Papa, let's move on and see what all is left of the 'Treasures of the sea'.
- Vasudha - Beta, the sea has also been known as the storehouse of our earth. The sea has 50% more carbon dioxide than present on earth. And this encourages plant life to flourish in these waters.
- Manav - Hey, these look like forests - don't they ? How come they're present in the sea ?
- Srishti - Manav, these are not forests but coral formations.
- Suryaprakash - Yes, these are polyps living in these coral formations.
- Vasudha - Children, these coral reefs have an important place in the living resources of the sea.
- Vivek - Manav, the parts of the sea where the coral reefs flourish, a variety of colourfull shells, conch-shells and muga are found;

there's a great variety of life in these areas. In terms of productivity, they are as productive as the rain forests on land.

Suryaprakash - Yes children, crabs, molluscs, sponges and a large number of beautiful fishes live in the coral reef.

Vasudha - We get many essential elements for producing medicines from these areas.

Manav - Now I understand how a larger variety of living forms flourish in the marine waters than on land.

Vivek - You're right, Manav, that the sea is home to a large number of plants and animals. You must be knowing that life began in the sea and flourished in the marine waters first.

Suryaprakash - Children, thousands of people get their food and employment from the sea, a huge industry flourishes on fishes prawns & crabs in the coastal areas, fishes, prawns and crabs give employment to thousands of people in addition to providing food for them.

Manav - Papa, don't you think we should also think of getting some food now ?

Vasudha - Yes, the children must be hungry now, why don't we go out and eat something-we could come back after that.

Srishti - Looks like Manav has come to eat out rather than see the exhibition on 'Treasures of the Sea'.

(Everyone laughs) (change over music)

- Suryaprakash - Manav, after we're over with food, we should learn about the non-living resources of the sea.
- Vasudha - Come on, let's go.
- Srishti - Hey, this picture here shows hills and valleys !
- Manav - Hills in the sea ?
- Vivek - Yes, Manav, the sea bed too has hills and valleys like we have on land.
- Suryaprakash - The average depth of the sea is nearly eight hundred feet. (i.e. 3800 meters).
- Vasudha - And at these depth, many metallic treasures are buried.
- Manav - Which metallic treasures are buried ?
- Srishti - Manav, mummy is talking about poly metallic modules.
- Vivek - They have given a lot of information about poly-metallic modules here.
- Suryaprakash - It says that the International Sea-bed Authority has ear marked one lakh fifty thousand square kilometer area in the Indian Ocean for India to conduct studies on poly metallic modules.
- Vasudha - Till about the year 2002, India has collected more than 250 tons of poly metallic modules from more than 2500 locations. And we've got many valuable metals from them.
- Vivek - Such modules from the protected marine areas of India contain nearly six and a half million tons of copper, cobalt, nickel and manganese.
- Manav - Didi, isn't gold and silver a part of these treasures ?

- Srishti - Yes, they're there and in addition, many other substances like bromine, iron, calcium and sulfate are dissolved in the waters of the sea.
- Manav - That means, not only common salt but we get expensive metals from the sea ?
- Vivek - We also get pearls from the sea.
- Manav - Well, then they've given this exhibition an appropriate name, 'Treasure of the Sea'.
[Everybody laughs]
- Srishti - So now papa what else is there in the 'Treasures of the Sea' ?
- Suryaprakash - Some hydrocarbons are also an important part of these treasures.
- Vivek - Yes, a petroleum known as black gold is extracted from the sea.
- Manav - But how does petrol come to be present in the sea ?
- Vasudha - Manav, take a look - this picture here shows the smaller plants and animals collecting at the bottom of the sea.
- Vivek - And then, in conditions of high temperature and pressure, they get converted into hydrocarbons.
- Srishti - And we get natural gas, gasoline, kerosene, diesel, wax, vaseline and heaven knows what else.
- Manav - So many hydrocarbon products ?
- Srishti - Manav, it's not surprising that the sea is known as the treasure trove of the earth - it contains innumerable natural resources.

- Suryaprakash - Well, we've covered nearly half the exhibition... now what's the plan ?
- Vivek - Papa, let's go out for a walk in the fresh air for a while.
- Manav - Mummy, we won't walk, let's sit in the park. But first, you're all welcome to this section on the sea as a source of energy.
- Srishti - (laughs) Manav, were you a gate keeper in your last life?
[everybody laughs]
- Suryaprakash - Children, come here, some very interesting information here...it says India has an Exclusive Economic Zone of more than 20 lakh square kilometers. All the resources from this area can be exploited.
- Srishti - Papa, tidal energy is also one of the treasures of the sea- isn't it ?
- Suryaprakash - Yes, children, many countries of the world use tidal energy to produce electricity.
- Manav - Is there a possibility of producing energy from tides in India ?
- Srishti - It is estimated that India can produce nearly 8000 to 9000 megawatt of tidal energy.
- Vasudha - This exhibit displays the tidal energy production in coastal areas.
- Manav - Tidal energy is connected to tides isn't it, didi ?
- Srishti - Yes, Manav, as a result of the gravitational pull of the sun and the moon, the coastal waters regularly rise and fall.
- Vasudha - Look, here they've shown how the rise and fall of the tides turns a turbine to produce electricity.

- Suryaprakash - In the Sunderbans area of our country, there's a plan to set up a tidal energy plant of nearly 3.5 mega watt of tidal energy.
- Vivek - Let's move on and find out what are the other sources of energy that the sea can provide.
- Suryaprakash - Further ahead, information about Ocean thermal energy conversion is given.
- Vivek - Yes, papa, it was a French engineer who first came up with the idea that energy can be derived in this way.
- Vasudha - In this, the principle of deriving energy from the sea is based on the fact that the different layers of the sea have different temperatures.
- Manav - This is something I also know. Because of the sun's rays, the upper layers of the sea get warmer than the layers down below !
- Srishti - Yes, Manav, with increasing depth, the temperatures keep falling.
- Suryaprakash - Based on this, electrical, energy was produced in the Hawaii island of Japan in 1970.
- Vivek - But for this, its essential that at least a difference of 25°C twenty five degree Celsius must be there between the different layers of the sea.
- Manav - Looks like the sea is going to be an important source of energy in the future.
- Vasudha - Yes, Manav, once we run out of fossil fuels, these renewable sources of energy are going to play an important role.

- Srishti - Hey, we haven't finished with the source of energy from the sea - there seems to be some more-let's move ahead.
- Suryaprakash - Look, here they've given details about wind energy and marine water currents along the coastal areas, and how electricity can be produced from them.
- Vivek - This picture here shows that the difference in the salinity of the marine waters also allows us to harvest electricity.
- Manav - Yes, my teacher had told us that the different seas of the world have different salinity.
- Vasudha - That's great Manav, you'll definitely make us proud one day.
- Srishti - I wonder for what.
[Everyone laughs]
- Vasudha - Look like we're in the last part of the exhibition.
- Suryaprakash - These pictures here, inform us about gas hydrate, the great scientist, Humphery Davy discovered hydrate in the year 1811.
- Vivek - In nature, hydrates are found in many forms. But in the sea bed they are present as methane hydrate which could be a good source of energy in future.
- Vasudha - Well, it says here that the estimated amounts of hydrates present on the sea floor is nearly twice that of the amount of fossil fuels available.
- Srishti - And these were discovered for the first time in 1980. These hydrates are being looked upon as energy sources of the future.

- Manav - Bhaiya, how many areas of gas hydrates have been identified till now ?
- Vivek - Manav, till now 77 (seventy seven) gas hydrate areas have been identified.
- Suryaprakash - Here is an article on the processes involved in exploring these sources.
- Vivek - And here they've given information about drilling and the submarines that are used in discovering these sources of energy and doing research on them.
- Srishti - The Indian ship named Sagarkanya is also doing just this.
- Vivek - Yes, Sagarkanya is a mobile laboratory in the marine waters. It's also involved in explorations and research.
- Suryaprakash - Well we should now think of returning home-its evening now.
- Vasudha - Yes, let's go.
- Manav - We have learnt a lot about the treasures of the sea. I used to think that we get only salt from the sea.
- [Change over music]
- Srishti - Its so pleasant outside-nice breeze is blowing.
- Vivek - It seems it might rain... and rains are also caused by the sea.
- Suryaprakash - Yes, children because of the sun's heat, the waters of the sea evaporate and these vapours rise and form clouds in the sky.
- Vivek - And air currents carry the clouds to different regions where they come down as rain.

- Manav - Yes, there are so many kinds of air currents- trade winds, jet stream etc.
- Vivek - Manav, jet streams help the airoplanes while the trade winds help the ships in the sea to regulate their speed.
- Manav - Bhaiya, its because of air currents that hurricanes and typhoons happen.
- Vasudha - Not only do air currents cause storms Manav, electricity can be generated from them.
- Manav - Electricity from air ? Well ... I think I read about it somewhere.
- Vivek - Manav of late, wind energy is proving to be an important source of energy; the wind's energy is used to turn the turbines and thus electricity is generated.
- Vasudha - Manav beta, the atmosphere and the seas are crucial to the existence of life on earth.
- Vivek - The climate on earth is also determined to a great deal by the interactive processes that go on between the atmosphere and the sea. So then, this is another contribution of the sea to our lives, isn't it ?
- Vasudha - Children, you were talking about rains - look now its raining although this is not the season for rains.
- Manav - Now we're not worried about the rain, we're nearly home.
- Srishti - Its because you hadn't bathed today- its raining to make you bathe, Manav !
- (everyone laughs)

(Change over music)

- Vasudha - Come on children, the food is ready.
- Manav - Mummy, please don't put any salt on my plate.
- Srishti - What happened, Manav, you used to ask for salt by the spoonfuls...!!
- Vivek - And you used to leave it like that.
- Suryaprakash - I hope no one's been telling you that whatever amount of salt you waste today, you'd have to pay for it in your next life ? There's a belief that you have to pick up salt with your eye-lashes in your next life.
- Vasudha - No, no...my son is not so superstitious.
- Srishti - Then how come he has learnt not to waste salt ?
- Vasudha - Well, it must be because of the exhibition we saw.
- Suryaprakash - Is that true, Manav ?
- Manav - Yes, papa, after seeing the exhibition today, I've realized that everything in nature-whether its salt or diamonds or pearls, everything in nature is important. And therefore, we should all use every resource with care.
- Vasudha - Well, Manav you have understood the importance of using the natural resources frugally, but all the Manav (human beings) on earth must also understand and act accordingly-then only will life on earth flourish for ever.

[Everybody laughs]

-The end-