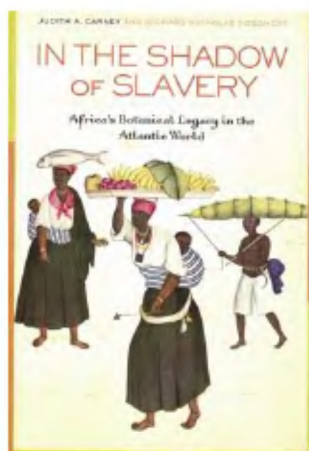


prominent place in college and university libraries and in the book collection of those who enjoy practising physics. Definitely this book is comparable to the best ones on physics of similar standards. Also, the author is in the process of writing similar books on other topics of physics. Hope these will help attract the young students into many classical domains of physics.

Although the book is addressed to students taking IIT-JEE and pursuing undergraduate course in physics, I would strongly recommend it to all students of physics, whether undergraduate/postgraduate or research student, and also to all practising physicists, whether a physics teacher or researcher who wants to enjoy physics.

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In the Shadow of Slavery: Africa's Botanical Legacy in the Atlantic World. J. A. Carney and R. N. Rosomoff. University of California Press, Berkeley, CA, USA. 2009. xvi + 280 pp. Price: US\$ 27.50.

This book under review is written in the context of the agricultural legacies brought to the New World by the slaves and their trade. This trade has been one of the darkest chapters of human history, comparable in horror and intensity to the Holocaust. The only difference has been in their durations. While the former lasted for more than three centuries, the

Holocaust lasted for only more than three decades. But, both the events are estimated to have claimed 11–17 million people.

Slavery among the humans has been as old as their trade and commerce. It was rare among the hunter-gatherers, since slavery is dependent on a system of social stratification. Thus, it was known to be prevalent in the ancient kingdoms of Sumer, ancient Egypt, Assyria, ancient Greece, the Roman Empire, and so on.

The trans-Atlantic slave trade has been the best known among them. This started in early 16th century, after Christopher Columbus discovered the New World in 1492, and continued almost till the end of the 19th century. The initiation of commercial trade by the Europeans (Portuguese, Dutch, Spaniards, British and French) with west Africa from about 1440, provided one of the two engines to initiate slave trade.

The second was the demand for labour to set up new colonies in the Americas. With the discovery by Columbus, began a steady wave of emigration of Europeans to the New World. It reached a peak in the 18th and 19th centuries. The new settlers wanted labour to set up homes, clear land and take up plantations, initially to feed themselves, and thereafter, for exporting commodities to Europe. The export items consisted predominantly of sugar (from sugarcane), cotton and tobacco. Most of the slaves came from west and central Africa, both predominantly tropical regions. Various estimates have put the number of slaves taken to the New World between 10 and 20 million. The human costs of the trade used to be high. About 50% of the total number is estimated to have died up to the first year of their landing in the new continent – about 5% while awaiting shipment, 15–20% at sea on board the ships, and the rest in their first year. The people – both men and women – used to be taken by force, then kept captive in the west African ports in barracks awaiting their sale to agents, who would then buy and transport them across the Atlantic Sea and sell them in the Americas. The life of the slaves used to be harsh, food and water always in short supply, both on land and on-board, and their treatment at the hands of their masters, generally cruel. The slave labourers were not permitted to carry any belongings with them; if they did, they consisted of smuggled items.

The voyages across the Atlantic used to take 6–10 weeks, a ship would carry up to 700 slaves and 50 crew. The ship would first sail from Europe to west Africa carrying goods, which they would trade for slaves and then set sail from west Africa, usually northwards to the Azores and then westwards across the Atlantic Ocean to the West Indies, the continental North America, and more than one-third of them to South America, mainly to Brazil and the Guineas. The ship had to provision for more than 700 persons for about 10 weeks. It used to take up to four weeks in the African port of call to assemble the required number of slaves and provisions. Food used to be served only twice, and always in limited quantities, and the slaves used to be kept in chains to restrain them from mutinying or jumping overboard to commit suicide. Life on-board was hard and this would explain the 10–20% human losses during the Middle Passage (the sea journey of slave ships from west Africa to the West Indies). The food articles that were left over used to be downloaded and the ships fully cleaned at the final port of call in the New World. This unintentionally became one of the modes of dispersal of plants to the New World. Even after their sale in the New World, the life of the slaves used to be one of privation and hard labour. The rations supplied to them used to be insufficient and monotonous (mostly corn-flour paste); it was to supplement this that the African slaves had to use their ingenuity, skill and labour for food production.

It is in this setting that the authors of this book had set out to chronicle the lives and struggles of the African slave labour. After reading the book, I am left with the impression that to do justice to the contents of this book, the subtitle could have been the real title of the book. But, commercial interests emanating from a broader interest in slave trade might have deterred the authors from doing this.

In this original and ground-breaking book, the authors have drawn on archaeological and historical records, oral histories, and accounts of slave-ship captains, traders and travellers to craft a detailed account of the lives, travails and invaluable contributions made by the slaves to the economies and ethnobotany of the American continent.

The authors have shown that the many familiar crops of the Americas – millets,

sorghum, coffee, ladies finger, water melon and black-eyed bean – are native to Africa, as they came as provision, cordage, fodder and bedding in the slave ships and also that the Asian crops like banana, rice, sugarcane, mangoes and sesame were carried to the Americas along with this human trade. The authors provide strong evidences to assert that contrary to the common assumption that these crops were introduced by the Europeans, it was the slave people of west and central Africa who had contributed most to their introduction, culture of crops and popularization in the Americas. They had also brought with them the indigenous knowledge, skill and traditions on their processing and use, both for consumption as food and in traditional medicine. The authors have also highlighted the less known aspect about the introduction of several African domesticated animals, birds, forage grasses and even weeds by this trade.

There are 10 chapters in the book, 52 pages of notes and 58 figures and photographs. The 'selected bibliography' itself runs through 21 pages. The extensive notes are a valuable supplement to information in the main text. In the New World, the enslaved African confronted a

stark work regime with no assurance of sufficient food. The first generation of Middle Passage slaves accomplished the extraordinary by using their body of knowledge that included agriculture, animal husbandry and skills to recognize wild plants of food and medicinal value, which enabled them to confront chronic hunger and diversify their otherwise monotonous diet.

Over the last 50 years, considerable studies have been made to chronicle the revolutionary changes wrought by the large-scale intercontinental movements of people across continents and oceans after the discovery of the New World by Columbus in 1492 (often termed the Columbian Exchange). Some transfers of plants and animals were deliberate, but many were unintentional and this included pests, diseases and weeds of all kinds. However, it largely overlooked the Middle Passage exchanges, and it is this deficit that the authors have uncovered and made up. They have succeeded in it admirably through extensive research, study and scholarship. The contributions of African slaves to global plant dispersal and use are inadequately unacknowledged and unappreciated. This book largely fills that void.

Before the regular European arrival in sub-Sahara, west Africa was a prosperous and food surplus region, as testified by the Arab travellers and early European chroniclers. Africa has contributed to the world more than 60 cultivated crop plants, including pearl millet, sorghum, coffee, watermelon, African yam, black-eyed pea, okra, palm oil, kola nut, tamarind, hibiscus and African rice. The principal domesticated animals that Africa contributed are cattle (*n'dama* cattle), donkey (*Equus asinus*), guinea fowl (*Numida meleagris*) and African sheep.

All in all, this is a path-breaking and definitive publication. The authors present their results with passion and conviction. The book is well illustrated with 62 figures and photographs, and supplemented with extensive notes and bibliography. It is moderately priced.

The volume is strongly recommended for students of economic botany, agriculture and social sciences.

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Nominations invited for Prof. G. N. Ramachandran Gold Medal for Excellence in Biological Sciences and Technology – 2010

The Council of Scientific and Industrial Research (CSIR) invites nominations for the **Prof. G. N. Ramachandran Gold Medal for Excellence in Biological Sciences and Technology for the year 2010**. The award is bestowed every year to an outstanding Indian scientist, who has made conspicuously important contributions, applied or fundamental, in the inter-disciplinary subject/field of Biological Sciences and Technology. The award would be given for the work done primarily in India during ten years preceding the year of the award. Prof. G. N. Ramachandran Gold Medal is presented during the inaugural function of Indian Science Congress.

Nominations addressed to the **Head**, Human Resource Development Group, CSIR Complex, Library Avenue, Pusa, New Delhi 110 012 should be sent as per prescribed pro-forma (original + one copy) along with reprints of five most significant publications of the last 10-year's period by **15 October 2010**. The details of the award and the prescribed pro-forma for nomination may be downloaded from our website <http://csirhrdg.res.in>