ognized as scientists of those days when Isaac Newton only made his great discoveries, and scientists of today, when humanity has made so many discoveries that it is simply impossible to remember all of them.

So without a doubt, Isaac Newton is one of the greatest people and the greatness of his and his discoveries on the merits is appreciated by all human descendants.

THE STEEL AS PART OF HISTORY

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The history of steel production dates back to the times when humanity appeared on earth. For all this time, made a great many wonderful discoveries and inventions. But the methods of steel mining can rightly be called the main among all inventions, among all discoveries.

Keywords: Puddling method, open-hearth method, industrialization, cast iron, steel.

The first thing that people got according to the official story is the "shatter iron". His process was simple. They took low-grade iron or swamp ore.

The process of ore melting took place directly in the coal itself. Therefore, the molten lump contained impurities of various metals, slag, stones and clay. Also in different fragments there was a different content of carbon. After that, by forging, the extra components were separated and by repeating the process of smelting-forging, steel was obtained. But this method had its drawbacks – it turned out products of small volume.

In the era of industrialization of society and the development of new military and industrial technologies, there was an urgent need for a large amount of steel.

And in the second half of the 18th century in England the “Puddling method” of steelmaking was invented. There was no contact between the cast iron and the fuel in the puddling furnace. Coal burned in the hearth, the heat from which was sent to the workspace, turning the loaded cast iron into a pasty mass. In this case, the furnace walls were covered with a layer of clay mixed with iron oxides, which helped the carbon in the molten iron to oxidize. At an enormous temperature and due to a special coating, carbon and impurities burned out, and crystals of sufficiently pure iron appeared in the melt. After collecting them into a bundle, the workers pulled him out of the furnace and sent him to a forging.

At the beginning of the second half of the XIX century, Henry Bessemer developed a new, more productive method for producing steel. The process of redistribution of liquid iron into cast steel by blowing through it compressed air, normal atmospheric or enriched with oxygen. The purge operation is performed in a Bessemer converter. The transformation of iron into steel is due to the oxidation of impurities contained in the iron – silicon, manganese, and carbon (in part also iron) with oxygen from the air of the blast. Despite the increase (with the oxidation of impurities) of the melting point of the metal, it remains in a liquid state due to the release of heat during oxidation reactions.

But after a decade: engineer Pierre Martin patented the process, which was called "open-hearth method", which allowed to melt cast iron, load it with scrap metal or ore – and produce steel of the desired quality and composition.

The most progressive today is considered the oxygen-converter method of steel production. At the same time, such promising ways of producing steels are being developed, such as direct reduction of steel from ore, electrolysis, electroslag remelting (ESR), etc.

SUSTAINABLE DEVELOPMENT IN INTERNATIONAL WATER LAW

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The article analyses the status of sustainable development in international law governing the utilization of transboundary freshwater resources. The research is centered around international treaties and instruments codify-