

We know that another Clupeoid, the herring itself, spawns under widely different conditions. The writer has observed the herring spawning in the fresh water of the river Schlei in Schleswig (Germany) and even in an arm cut off from a bay, in which the water has become quite fresh. On the other hand the same species, but may be a different race, spawns in deep and very salt water off the west coast of the British Isles.

As a result of Dr. Hora's discoveries a further question arises. Why does the *Hilsa* migrate up the Ganges as far as Bhagalpur and Monghyr and even up the Son to Dehri? Is this migration for food and is it entirely disassociated from the act of spawning? Or is it essentially a spawning migration?

Is it possible that there are two, or more, races or varieties of *Hilsa*, with different spawning grounds and habits? The fishermen can easily distinguish the male *Hilsa* (called *pait-hilsa* in Eastern Bengal) from the females which they brought to the writer when asked for "Unda-wallahs".

Dr. Hora calls his paper a "Preliminary Note", rightly so in our opinion, since it is to be hoped and expected that we may look for further papers on this most interesting problem, which he has already done so much to elucidate.

Another point to be cleared up is what is really the fish known to the fishermen as *Jatka* or *Jatkya*? According to Mr. K. C. De the *Jatkya* is the smallest of the herring family (*Clupea fimbriata*) and is found in the estuaries as high up as Goalundo from February to April. It is a pretty fish with a rather dark back and silvery sides shot with gold. From the similarity in shape, appearance and taste, the fishermen describe it as the young of the *Hilsa*.

According to Mr. Finlow, "The fingerling of the *Hilsa* has been identified as the *Jatka*, a small fish less than 6" long, found in the Buriganga, Lakhya and Meghna rivers in Eastern Bengal in February-March."

Now that the first and most difficult step has been taken by Dr. Hora in elucidating the mystery of the spawning of the *Hilsa* we await further discoveries in the near future and in particular the eggs and first larval stages.

In conclusion, the reviewer would fail in his duty if he omitted to congratulate Dr. Hora on the appearance of one of the most valuable and interesting, if not *the* most valuable and interesting, paper on Indian fish published for many years.

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CENTENARIES

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Gregory, James (1638-1675)

JAMES GREGORY, an eminent Scottish mathematician, was born in a parish near Aberdeen in November 1638. The Gregory family had produced many persons who distinguished themselves in science. James was the first and most eminent among them. In the next generation his own son was professor of physics and three of the thirty-two children of his brother David were good mathematicians. James' education began at the grammar school of Aberdeen and was completed at Merischal College. His scientific talent was discovered and encouraged by his elder brother David. From 1664 to 1667 he studied mathematics at Padua.

HIS CAREER

On his return to England in 1668 Gregory was elected a fellow of the Royal Society.

Late in the same year he was appointed professor of mathematics in the University of St. Andrews. In 1674 he accepted the mathematics chair of the University of Edinburgh. He was the first "separate professor of mathematics, exclusively devoted to his subject, and not called upon to go through the drudgery of regenting..... (and) only required to give two public lectures a week to such students as wished to attend."

HIS CONTRIBUTIONS

James Gregory was an inventor of the first order. The reflecting telescope universally employed in the eighteenth century, was first described in his *Optica promota* (1663). His chief mathematical contributions relate to (1) quadrature of circle and hyperbola, (2) use of convergent series to calculate logarithms and to find lengths of

curves, (3) Mercator's chart, (4) solution of the Keplerian problem and (5) geometrical methods for drawing tangents to curves. His brother David strongly urged him to publish his results on quadrature. But he very generously refused to do so on the ground that, as he had been led to it by Newton's discovery, he was bound in honour to wait till Newton should publish his.

Vera Circuli et hyperbolae quadratura (1667), *Geometricae pars universalis* (1668) and *Exercitationes geometricae* (1668) were his works.

HIS END

Gregory has been described as a man of very acute and penetrating genius, though of an irritable temper. He was devoid of ambition but was keenly sensitive to criticism. One night in October 1675, while showing Jupiter's satellites to his students, he was struck blind by an attack of amaurosis, and died of apoplexy three days later.

Becket, William (1684-1738)

WILLIAM BECKET, a British surgeon and antiquary, was born at Abingdon in 1684. He was elected a fellow of the Royal Society in 1718 and read three papers on the *Antiquity of the venereal disease*. He was also an original member of the Society of Antiquaries, which was virtually established in 1717. He was for some years surgeon to St. Thomas's Hospital, Southwork.

His works are: (1) *New discoveries relating to the cure of cancers* (1711-1712); (2) *An enquiry into the antiquity and efficacy of touching for the king's evil* (1722); (3) *Practical Surgery, illustrated and improved, with remarks on the most remarkable cases, cures and discussions in St. Thomas's Hospital* (1740) and (4) *A collection of chirurgical tracts* (1740).

Becket died at Abingdon, November 25, 1738.

Herschel, William (1738-1822)

WILLIAM HERSCHEL, a famous European astronomer, was born at Hanover, November 15, 1738. He was a son of a musician. His father brought him up to his own profession with four other of his sons. He came to England sometime between 1757 and 1759 and during this period it is said that his philosophical

tastes were so strong that he spent all his pay on a copy of Locke's *On the human understanding*.

URNS TO MATHEMATICS

About 1766 when Herschel was organist of a Chapel at Bath, he "resolved to place all his future enjoyment" in the pursuit of knowledge and turned his attention to mathematics. "After fourteen to sixteen hours' teaching he was won't to unbend his mind with Maclaurin's *Fluxions*. Smith's *Optics* and Fergusson's *Astronomy* were the companions of his pillow and inspired his resolution to take nothing upon trust."

HIS CONTRIBUTIONS

After two hundred partial failures Herschel made his own telescope of five feet focal length and began his famous observations which have been recorded in the *Philosophical transactions* of the Royal Society in a series of about 69 papers, the first of which was published in 1780 under the title *Astronomical observations on the periodical star in Collo Ceti*. His last paper which was *On the places of 145 new double stars*, was published in the first volume of the *Memoirs* of the Astronomical Society (1822). Herschel must be remembered by the number of bodies which he added to the solar system. Including Halley's Comet and the four satellites of Jupiter and five of Saturn, the number previously known was eighteen; to which he added nine, namely Uranus (1781) and six satellites and two satellites to Saturn. His announcement of the motions of binary stars, his discovery of the proper motion of stars (1783) and his speculations on the Milky Way and the constitution of nebulae first opened the road to other systems in the universe. He was the virtual founder of sidereal science and his only rival in exploring the heavens was his son. He also made telescopes for most of the European Observatories.

HIS ABSORPTION IN WORK

He had his telescope set in his own garden. During intervals of a concert he would run, still in lace ruffles and powder, from the theatre to the workshop. He would polish his mirror continuously for sixteen hours and more. He is stated to have once worked and observed without rest during three days and nights, sleeping at the end for twenty-six hours at a stretch. Miss Burney describes him as "a man