employed by J. H. Speke and Richard Burton as porters and escorts in 1857. the language is somewhat archaic Bantu, much mixed with Arabic, while Indian, Persian and even English, Portuguese and German words have contributed to the vocabulary. Grammatical treatises on it have been published, and into it portions of the Bible have been translated by Bishop Steere.@@1 The Swahili are Mahommedans, but in disposition arc genuine negroes. Christian missions among them have met with little success.

See Johann Ludwig Krapf, *Dictionary of Swahili Language* (London, 1882); Bishop Steere, *Handbook of the Swahili Language* (London, 1894); *Collection of Swahili Folk-Tales* (1869); A. C. Madan, *English-Swahili Dictionary* (Oxford, 1894) ; Delaunay, *Grammaire Kiswahili* (Paris, 1898). See also Bantu Languages.

**SWALLOW** (A. S. *swalewe,* Icel. *sυala,* Du. *zwaluw,* Ger. *Schwalbe),* the bird which of all others is recognized as the harbinger of summer in the northern hemisphere. The name *Hirundo rustica of* Linnaeus is now employed for the common chimney-swallow of Europe, which has been divided into four or five races. In summer it ranges all over Europe, and in Asia extends to Manchuria and China; in winter it migrates south, reaching India, Burma, the Malay Peninsula and the whole of Africa. The common swallow of North America, usually called the barn-swallow, is *H. erythrogastra,* but in summer it also reaches Alaska and Greenland and extends across to Lake Baikal. The winter migration extends to Burma for the Asiatic swallows and to South Brazil for those of America. In all some twenty-seven species of Hirundo are recognized, the range of the genus being practically world-wide. Returning, usually already paired, to its summer haunts, after its winter sojourn in southern lands, and generally reaching England about the first week in April, the English swallow at once repairs to its old quarters, nearly always around the abodes of men; and, about a month later, the site of the nest is chosen, resort being had in most cases to the very spot that has formerly served the same purpose—the old structure, if still remaining, being restored and refurnished. So trustful is the bird that it commonly establishes itself in any of men’s works that will supply the necessary accommodation, and a shed, a barn, or any building with an open roof, a chimney that affords a support for the nest, or even the room of an inhabited house— if chance should give free access thereto—to say nothing of extraordinary positions, may be the place of its choice. Where­soever placed, the nest is formed of small lumps of moist earth, which, carried to the spot in the bird’s bill, are duly arranged and modelled, with the aid of short straws or slender sticks, into the required shape. This is generally that of a half-saucer, but it varies according to the exigencies of the site. The materials dry quickly into a hard crust, which is lined with soft feathers, and therein are laid from four to six white eggs, blotched and speckled with grey and orange-brown deepening into black. Two broods are usually reared in the season, and the young on leaving the nest soon make their way to some leafless bough, whence they try their powers of flight, at first accompanying their parents in short excursions on the wing, receiving from them the food which they are as yet unable to capture, until able to shift for themselves. They collect in flocks, often of many hundreds, and finally leave the country about the end of August or early in September, to be followed, after a few weeks, by their progenitors. They moult their feathers in their winter quarters, and this fact affords one of the strongest arguments against the popular belief (which, curious to say, is still partly if not fully entertained by many who should know better) of their becoming torpid in winter, for a state of torpidity would suspend all animal action.@@2 The chestnut forehead and throat,

the shining steel-blue upper plumage, and the dusky white —in some cases reddening so as almost to vie with the frontal and gular patches—of the lower parts are well known to every person of observation, as is the markedly forked tail, which is become proverbial of this bird.

Taking the word swallow in a more extended sense, it is used for all the members of the family Hirundinidae,@@’ excepting a few to which the name martin *(g.v.)* has been applied, and this family includes from 80 to 100 species, which have been placed in many different genera. The true swallow' has very many affines, some of which range almost as widely as itself does, while others seem to have curiously restricted limits, and much the same may be said of several of its more distant relatives. But altogether the family forms one of the most circumscribed and therefore one of the most natural groups of Oscines, having no near allies; for, though in outward appearance and in some habits the swallows bear a con­siderable resemblance to swifts *(q.v.),* the latter belong to a different order, and are not Passerine birds at all, as their structure, both internal and external, proves. It has been sometimes stated that the Hirundinidae have their nearest relations in the flycatchers *(q.v.) ;* but the assertion is very questionable, and the supposition that they are allied to the Ampelidae (cf. Waxwing), though possibly better founded, has not been confirmed. An affinity to the Indian and Australian *Artamus* (the species of which genus are often known as wood-swallows or swallow-shrikes) has also been suggested but has not been accepted. (A. N.)

**SWALLOW-HOLE,** in physical geography the name applied to a cavity resulting from the solution of rock under the action of water, and forming, or having at some period formed, the entrance to a subterranean stream-channel. Such holes are common in calcareous (limestone or chalky) districts, or along the line of outcrop of a limestone belt among non-calcareous strata. These cavities are also known as sinks, dolinas or butter-tubs, and by other local names, and sometimes as pot-holes; the last term, however, is also synonymous with Giant’s Kettle *(q.v.).* See Cave.

**SWAMMERDAM, JAN** (1637-1680), Dutch naturalist, was born on the 12th of February 1637 at Amsterdam, the son of an apothecary and naturalist. He was destined for the Church; but he preferred the profession of medicine, taking his doctor’s degree at Leiden in 1667. Having necessarily to interest himself in human anatomy, he devoted much attention to the preservation and better demonstration of the various structures, and he devised the method of studying the circulatory system by means of injections. He also spent much time in the study of insects, investigating the subject of their metamorphosis, and in this and other ways laying the beginnings of their natural classification, while his researches on the anatomy of mayflies and bees were also of great importance. His devotion to science led to his neglect of practice; his father, resenting this, stopped all supplies and thus Swammerdam experienced a period of considerable privation, which had the most unfortunate con­sequences to his health, both bodily and mental. In 1675 his father died, leaving him an adequate fortune, but the mischief was irreparable. He became a hypochondriac and mystic, joined the followers of Antoinette Bourignon, and died at Amsterdam on the 15th of February 1680.

His *Allgemeene Verhandeling van bloedeloose diertjens* appeared at Utrecht in 1669, and his *Biblia naturae, sive Historia insectorum in certas classes redacta* was published after his death by H. Boer- haeve in 1737-1738. He was also the author of *Miraculum naturae, seu Uteri muliebris fdbrica* (Leiden, 1672).

**SWAN, JOHN MACALLAN** (1847-1910), English painter and sculptor, received his art training first in England at the Worcester and Lambeth schools of art and the Royal Academy schools, and subsequently in Paris, in the studios of J. L. Gérôme and E. Frémiet. He began to exhibit at the Academy in 1878, and was elected associate in 1894 and academician in 1905. He was appointed a member of the Dutch Water-Colour Society in 1885; and associate of the Royal Society of Painters in Water Colours in 1896 and full member in 1899. A master of the oil, water-colour and pastel mediums, an accomplished

@@@1 The language was first reduced to writing by the Arabs, who still use the Arabic character. But the European missionaries have replaced this by the Roman system, which is more suited for the transliteration of most African, and especially of the Bantu, tongues.

@@@2 See John Hunter’s *Essays and Observations in Natural History,* edited by Sir R. Owen in 1861 (ii. 280). An excellent bibliography of the swallow-torpidity controversy, up to 1878, is given by Professor Coues *(Birds of the Colorado Valley,* pp. 378-390), who seems still to hanker after the ancient faith in “ hibernation.”

@@@’ An enormous amount of labour has been bestowed upon the Hirundinidae by R. B. Sharpe *(Cat. B. Bril. Mus.* x. 85-210), and in the finely-illustrated *Monograph* which he and C. W. Wyatt have published (2 vols. 4t0, London, 1885-1894).