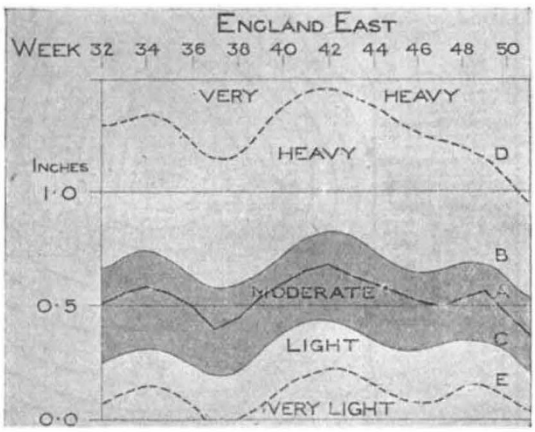
ones, and they are balanced by the heavy rainfall of a few wet weeks.

Thus in characterising weeks for counting it is necessary to deal with probable frequency of occurrence as well as with the relation of the week's fall to the average depth of rain. Frequency results are most easily expressed by odds. It has been sought to determine limits for a week of so-called "heavy" rainfall, so that the odds are two to one against its occurrence, and the same for "light" rainfall. Further, "very heavy" rainfall has been so defined that the odds are eleven to one against its occurrence, and "very light" in a similar way.

To determine the limits for these odds the weekly values for the twelve districts for the twenty-five years 1881 to 1905 have been dealt with. Smoothed mean values for each week have been obtained, and frequency results for groups of six or seven weeks, to get a sufficiently large combination of values to make the odds a reasonable representation of the probabilities of the case. Limits are then chosen so that, of the whole number of rainfall values for a group of weeks, one-third are moderate, one-third heavy, one-twelfth very heavy, one-third light, one-twelfth very light. Sunshine and accumulated temperature above and below 42° are treated similarly. The adjectives selected for sunshine are "abundant" and "scanty," and for warmth "unusual" and "deficient."



Classification of Weekly Rainfall.—Portion of diagram for the District "England East" for the period from the 32nd to the 51st week. The line A is the smoothed 25-year average of the weekly rainfall. If the rainfall for any week fall within the central shaded belt, it is characterised as "moderate"; if it fall outside this belt it is either "heavy" or "light"; if it fall above the dotted line D or below the dotted line E, the word "very" is prefixed to the designation. The limits are so adjusted that ⅓ of the values for the 25 years 1881–1905 fall below the line C, ⅓ between the lines B and C, and ⅓ above the line B. One-twelfth of the values fall above or below each of the limits D and E.

The work necessary for obtaining these limits has been very heavy, but incidentally a number of interesting points about the weekly values for the elements in the several districts and the frequency distributions have been disclosed which will be the subject of an official publication on the seasons in the British Isles.

The monthly report which began with the January number, issued at the end of February, shows less change than was anticipated at one time. Negotiations were initiated with the view of making it a complete index of climatological work for the British Isles, to contain a line of data for each station contributing observations to the Meteorological Office, the Royal Meteorological Society, and the Scottish Meteorological Society. At present the three bodies collect and publish observations independently; but if a joint publication could be arranged, any person requiring climatological data would be able, by reference to a single publication, to know what information was in existence and where it was to be obtained. Unfortunately difficulties arose which could not be overcome in time, and as regards climatology the Report for 1907 is limited to the 170 stations in direct or indirect connection with the office. But Dr. H. R. Mill, the director of the British Rainfall Organisation, has expressed his willingness to contribute a rainfall map of isohyetal lines based on the monthly results for about 500 stations in the British Isles, and in the current issue this replaces the map showing rainfall values at the 170 stations which have always been regarded as too few for drawing isohyetal lines.

It ought, perhaps, to be added, as regards the daily weather report, that it is prepared and printed at the public expense, and is sent free to anyone who pays the cost of postage, wrappers, and addressing. Complaint has sometimes been made that it is not advertised as it should be, but as a matter of fact the "advertisable interest" rests with the Post Office. For the weekly report, with which the monthly is included, a subscription is charged to meet the cost of printing. But this report gives so compendious a statement of the weather in the British Isles, daily, weekly, monthly, quarterly, annual, and average, in an annual volume of about 450 pages, that it ought to find a place in every reference library. It has now been in existence for more than twenty-five years, and its value as a homogeneous body of statistics increases with every additional year. Its weekly pages are too much like pemmican to be attractive to the general reader; but a disturbing reflection about the matter is that when its life has continued for fifty years, and the public becomes educated to appreciate its uses, there will be no means of meeting demands for the numbers which are now regarded as being merely of interest to the curious meteorologist.

TECHNICAL TERMINOLOGY.

AN interesting feature of the progress of engineering science has been the gradual formation of the engineering vocabulary. Ever since the days of the early constructors there has been a steady application of fresh terms to technical practice, and it is not difficult to trace the methods by which this has taken place. But the process has operated to such an extent that what could almost be called a new language has arisen, and specimens could be quoted from the best examples of engineering literature which to scholars of a century ago would convey no meaning, though the origin of each individual term might be at once apparent to them.

Some of these terms have interesting histories by reason of the changes of sense they have passed through. The word "skid," for example, was originally the name of the buffer rope hung over a boat's side to protect it from injury. It was then applied to the shoe placed under a wheel to brake the motion of a carriage, and finally it was turned into a verb to express the vagaries of vehicles in muddy weather. "Switch," first applied in railway practice and connected with the peculiar motion of the bar so named, was passed on to electrical machinery. The "salamander" is a newt of a kind supposed, according to an old legend, to be capable of living in fire. The newt, surrounded by his flames, is sometimes seen in heraldry, and from this source it was applied to certain kinds of foundry irons and crucibles. "Splay" is borrowed from architecture, and in its original sense means an obliquity or bevel edge. The bevel edge is frequently used to expose some interior part, and hence the

origin of the term, which is simply a contraction of "display." The "tender," or attender, of the vessel or locomotive, and the "tender" supplied by the contractor, though of such different meanings, are derived primarily from the same Latin word, meaning "to reach out." On the other hand, the verb "fuse" comes from the Latin, meaning "to pour," and the noun "fuse," together with "fusee," from a word meaning "spindle." It is interesting to note that several words, such as magnetic, type, amalgamate, wire, and cable, have been borrowed from the technical vocabulary and applied to the language of ordinary affairs, and no doubt as mechanical appliances enter more and more into the essentials of social existence this process will be increasingly carried on. Perhaps the most interesting history of all is that of the word "pole," as used by electrical engineers. Its original is a Latin term meaning simply an axis of rotation. From this it has been applied to the particular axis on which the earth rotates, thence to the two points on that axis of special interest, to the ends of a suspended magnetic needle, and so to the points of intensity of any magnet. By analogy it has finally been applied to the terminals of an electric cell, and it is hard at the present day to see in its application—whether to the battery or the dynamo—any likeness to the original sense of the word.

Many of our oldest terms have simply accompanied the ideas they express into engineering practice from architectural, nautical, smithy, and domestic uses. Examples are swivel, lathe, pump, gauge, list (from the same root as "lust"), fish-joint, brake, and most of the terms connected with masonry construction. Some of Latin origin are interesting, *e.g.* piston (pinsere = to pound, *cf.* "pestle"), camber (camerare = to enclose or vault), filter (filtrum = felt), and vice (vitis = the tendril of a vine). Some are derived from European languages—scarf (Scand. skarf = a joint), cam (Dut. kam), bush (Dut. bus = a box), ratchet (Eng. rack), calipper (Eng. calibre), and jetty, rabbet, tunnel, pulley, quoin, from the French. Others the derivations of which have never been traced are sprocket, cotter, journal (in the mechanical sense), and spline.

Of the methods employed to-day for christening new engineering conceptions, the favourite is the use of analogy. Probably more than a third of our expressions have been introduced in this way. In many the analogy is obvious—sleeper, bed, jacket, feed, booster (a U.S. colloquialism). Some are due to a likeness in appearance—crane, nose, shaft (from the arrow), groin (from its position), muff, worm; others to a similarity of function or movement—dead-beat, torpedo (the name of a fish), dog and jack (originally applied to any domestic implements of humble usefulness), pinion (from the joint of a bird's wing), valve (from anatomy), and siren (originally "one of certain sea-nymphs, who . . . sang with bewitching sweetness," dictionary!). In one or two the analogy is more subtle. Thus a "washer" is really a kind of lubricant, and so was considered to resemble the film of water between the hands in washing. "Bogie" is said to be from "bogey," a fiend, the bogie coal-waggon being so called because, from its suddenly turning when people least expected it, they used to exclaim that the new waggon was "Old Bogey" himself. "Steelyard," according to many dictionaries, owes its origin to the yard in London where steel was sold by German merchants, and where this kind of balance was in use.

Somewhat akin to this class are the one or two compound words we have formed—flywheel, manhole, breakwater, ingot (an ancient example, from "in" and Anglo-Saxon "géotan," to pour)—and words coined with the aid of suffixes, such as spin-dle (very old), tire (tie-r), troll-ey, tap-pet, span-ner.

Many technical terms have been formed directly from Latin and Greek words. There are old examples—pawl, carpentry, canal, cylinder; one or two of more modern date, such as electricity, annular, hydraulic; and a host of recent ones, telegraph, telautograph, microphone, vulcanite, dynamo, electrotechnics, asbestos, torque, rheostat, &c.

In general, it would seem that the terms used in construction work and machinery have been introduced mostly by the use of analogy, while the pioneers of industries—such as electrical engineering—more closely related to pure science, whose work has often been carried on in the university laboratory, have favoured the classical method in coining words.

Eight words used by electrical engineers form a class by themselves in that, instead of slowly making their way from some individual's suggestion to general recognition, they have been established by a parliament of scientific men, and have found an immediate and universal adoption. These are the electrical units. The original two—ohm and volt—were suggested by Sir C. Bright and Mr. Latimer Clark. These, together with ampere, coulomb, and farad, were made legal at the International Congress in 1881, and three fresh ones, joule, watt, and henry, were authorised by the Chamber of Delegates at the Chicago Exhibition in 1893. One striking feature of each of these words is its terseness, a virtue so often lacking to scientific expressions.

Proper names have been introduced in other ways as well. The most famous example is "macadam." Others are tramway (Outram's ways—from the inventor), galvanic, voltaic (in use before the unit was suggested), magnet, catalan (from Catalonia, the home of the catalan forge), derrick (the name of a hangman of the seventeenth century), and, a queer hybrid sometimes seen in print, marconigram.

A few words have been abstracted from foreign languages. Such are quay (an old example), voussoir, turbine, barrage, tuyere (also spelt, according to the dictionaries, twyer, tweer, tuyer, and twier), automobile, and chassis.

About the only scientific term (outside the advertisement columns) that can properly be called an invention is the word "gas." This we owe to a Dutch chemist, van Helmont, of the sixteenth and seventeenth centuries. His explanation is that, "because the water which is brought into a vapour by cold is of another condition than a vapour raised by heat; therefore . . . for want of a better name, I have called that vapour Gas, being not far severed from the Chaos of the Auntients." The word "clack," formerly applied to the non-return valve, is an echoic formation, but it was not coined to describe the valve, its first use being to express the sound produced by such mechanical appliances. It seems a little strange that the engineer, whose work is so often associated with original invention, should so seldom resort to original methods in devising names for his productions.

There are still many cases of inventions that have come into general use which are badly in want of a short, expressive title. Thus we have nothing better to describe the practice of signalling between mutually invisible points through the medium of the æther than "wireless telegraphy"; the only name available for the class of prime mover which works by the explosion of a vapour is "internal combustion motor"; and surely a handy substitute would be welcomed for "electric power supply," and some

more appropriate title for its particular vital organ than "central station." "Ferro-concrete" is certainly an improvement on "reinforced concrete," but it is a clumsy name for a material which does such important work in civil engineering. A similar case which existed until lately was the need of a substitute for "aërial navigation," but this has been most happily met by the suggested "aviation," a word which is both short in spelling and wieldy in pronunciation.

It is to be hoped that those who have to coin new engineering terms in future will follow the example of the old Dutch chemist and depart as little as possible from three-letter monosyllables. The times are growing too busy for more of the three- and four-syllabled obstructions of physicists and electricians to be tolerated.

A. H. DOWNES-SHAW.

SPORT IN CEYLON.[1]

FIFTEEN years' experience of the jungle, even though it be limited to one or two annual hunting trips, ought to suffice to make any keen sportsman (like the author of the volume before us) thoroughly familiar with the habits of all the larger forms of wild animal life to be met with in a circumscribed area somewhat smaller than that of Ireland. Mr. Storey has, however, not been content with his own great practical knowledge of the denizens of the Ceylon jungle and their ways, but has enlisted the aid of a number of his fellow-sportsmen. With such an array of specialists, the book may be regarded as a thoroughly up-to-date account of the sport to be met with at the present day in one of the most lovely of the islands of the East.

FIG. 1.—Head of Ceylon Buffalo. From Storey's "Hunting and Shooting in Ceylon."

[1] "Hunting and Shooting in Ceylon." By H. Storey (and others). Pp. xxiii+365; illustrated. (London: Longmans, Green and Co., 1907. Price 15s. net.

Unfortunately, this sport is nothing like what it was when Sir Samuel Baker shot and hunted in the island some sixty years ago, and if matters are permitted to go on as they are, it is the author's opinion that several of the game animals will be in danger of extermination, or at all events will be so reduced in numbers that Ceylon will cease to be a hunting-field for European sportsmen. The two species most sorely harried appear to be the chital, or spotted deer (Fig. 2), and the elephant. As both probably represent races peculiar to the island, their extermination would be little short of a calamity.

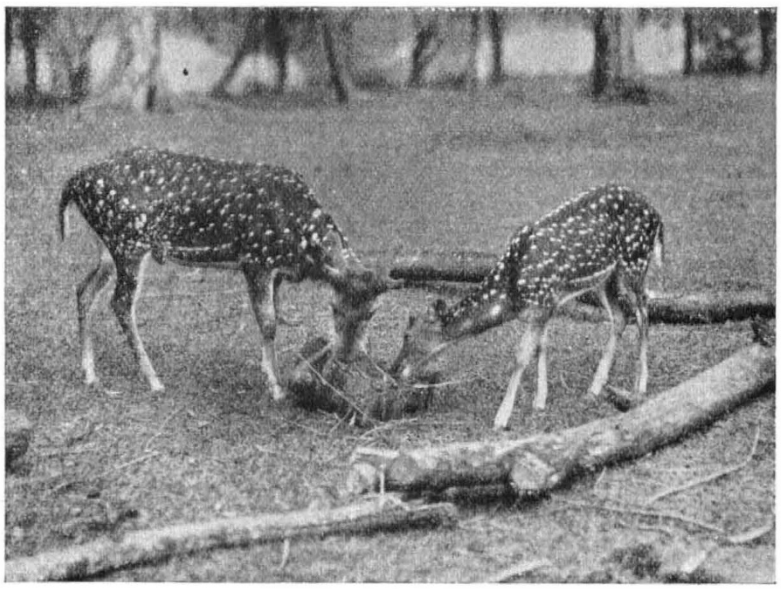


FIG. 2.—Chital or Spotted Deer; the buck with the antlers in velvet. From Storey's "Hunting and Shooting in Ceylon."

In the case of the chital (and this also applies in a minor degree to the sambar deer) the mischief seems to be due to the killing of this beautiful animal by native hunters for the sake of its flesh, which is cured and dried. The remedy suggested by Mr. Storey is the prohibition of all trade in products of the chase within the island itself, the villagers being, however, permitted to kill such deer as they require for themselves. As regards elephants, of which the author believes there are less than two thousand in the wild state in the island, the destruction appears to be mainly due to the European sportsmen, whose exertions were formerly stimulated by a Government reward for every one of these noble animals slain.

As Ceylon elephants generally have no tusks to speak of, it is a little difficult to see why sportsmen are so keen on shooting them, and it is to be hoped that the destruction may be stopped in the near future. Wild tuskers (not improbably belonging to a race originally imported from the mainland) are now, Mr. Storey tells us, very scarce in the island, although, except in the case of "rogues," they are rigorously protected. Naturalists will be much interested in a giant race of (practically) tuskless elephants living in the Tamankaduwa district which are much larger than the ordinary Ceylon form, and commonly attain a height of between 9 feet and 10 feet.

The author's observations with regard to the wild buffalo of the northern districts of the island, and