ing the year being about a quarter of a million dollars, from the Philippines but about \$1,000 and from Hawaii less than \$100.

The third item of imports from the islands, considering them in the order of magnitude, is manila hemp, which comes, as the name indicates, from the Philippine Islands, the total value of the importation of this article being for the year \$7,172,368, of which \$5,024,770 came direct from the Philippines.

THE EXHIBIT OF THE DUTCH EAST INDIES AT THE PARIS EXPOSITION.

OVER 2,500 square yards, near the Siberian pavilion, are devoted to the Dutch East Indian exhibition. It consists of three separate buildings; in the center stands the Temple of Pjandi Sari, which is one of the most remarkable specimens of Hindoo architecture in the Island of Java. It is supported on either side by two models of native houses. The temple is an imposing structure and its decoration is magnificent. The exact replica has been conscientiously and artistically achieved by the aid of moldings cast from the actual sculptures in the temple in Java. The temple is built in two terraces, one above the other. The base of the second terrace is covered with reproductions of remarkable bas reliefs from a temple which represent scenes in the life of Buddha. They are 200 feet long. Inside of the temple are grouped reproductions of the most beautiful specimens of Hindoo architecture and

restoration of the ancient temples, evidently under the direction of the Egyptian priesthood, and, judging from the inscriptions, with the most scrupulous conservatism of the ancient plan and purpose.

MEMPHIS.

Abydos has been called the cradle of Egypt, but the seat of the first settled monarchy appears to have been the great city of Memphis, just south of modern Cairo, and said to have been founded by Menes, the first historic king, about 4000 B.C. This city must have been one of the largest of the ancient world, and the ruins of an immense place remained as late as the twelfth century A.D.; but, owing to the inundations of the Nile, nothing remains of it at the present day but a few earth mounds and two colossal statues, which stood in front of the great Temple of Ptah, and the Pyramids and innumerable tombs built on the uplands west of the Nile, which formed the great cemetery of the city, and among which the famed Pyramids of Gizeh formed the chief. These are surrounded by whole streets of tombs.

The inundations of the Nile have also destroyed almost every vestige of the large cities which once existed in the Delta, so that it is necessary to go 200 or 300 miles up the Nile before reaching extensive remains of temples. The whole valley of the Nile, including the river itself, would appear to have risen since the times of ancient Egypt, so that the Temples of Denderah and Edfu, which will be described in detail, are now some 30 feet or 40 feet below the level of

EGYPTIAN COSMOGONY.

The Egyptians imagined the world to be a vast plain suspended in space, of which Egypt, with the Nile running through it, was the center and by far the most important part, the nations round being comparatively barbarous and uncultivated. Below this plain was stretched out the plain of the nether world, with another Egypt and Nile almost the counterpart of those in this world; the sun and moon and heavenly bodies, after traversing above the world, descended in the west and passed back again over the plain of the nether world, rising again in the east. All the spirits of the departed went to the nether world, and those that were judged worthy of continuing life remained there with the same avocations and amusements that had occupied them in this world.

It is at Denderah before we come to any considerable remains of a temple. This temple, as it actually stands, was rebuilt in the time of the Ptolemies, and the decorations were continued down to the time of the Roman emperors, but the inscriptions show that it was a restoration of an older temple which stood at the same place from the very earliest times. One inscription says: "The great building plan of Ant (Denderah) was found written in ancient characters on hide of the times of the successors of Horus." Another inscription says that King Totmes III. made a restoration of this monument found described in ancient characters of the time of King Khufu (the builder of the Great Pyramid of Gizeh). Thus it appears that

INTERIOR OF THE PAVILION OF THE DUTCH EAST INDIES AT THE PARIS EXPOSITION—EXHIBITION OF IDOLS.

sculpture, as shown in our engraving, for which we are indebted to L'Illustration.

EGYPTIAN TEMPLES.

By ALEXANDER PAYNE, F.R.I.B.A.

A MEETING of the Architectural Association took place recently, at which Mr. Payne then read his paper on "Egyptian Temples," of which the following is a summary:

I think I may say without fear of contradiction that in studying the temples of Egypt we are studying the earliest monuments that exist devoted to religion and erected by what was the most civilized nation of the ancient world.

There is evidence to show that most of the religions of the ancient world were derived from a common origin, and had for their main idea either the worship of the powers of nature or as regarding nature as a theater descriptive of divine things. In Egypt it is certain from the monuments themselves and the representations on them that their early worship was derived from the phenomena of nature, and fortunately we have from Egyptian hieroglyphics a full description of what took place in each room of the temples, where staircases are provided leading up to the flat roofs, so that certain ceremonies might take place in full view of the heavenly bodies in honor of which the services are held.

When the Greeks and Romans successively conquered Egypt and made it a province of their empires no attempt was made to disturb their worship and religion, so similar in some respects to their own; in fact, the Egyptian deities were at once adopted as part of the State religion, and vast sums were spent in the

the ground, and have had to be dug out quite recently for their complete examination, and are now under the care of the Government as ancient monuments. There are also extensive remains at Kom Ombo, Esneh, Philæ, and other places on the river. It is at ancient Thebes that an idea of the magnificence of ancient Egypt can be best obtained. The ruins of temples and buildings there exceed those left in the remainder of Egypt altogether, if we except the Pyramids, and are far more extensive than anything remaining either at Rome or Athens. The site of the ancient city, being mostly above the level of the inundation, has escaped the destruction that has fallen upon other cities. Thebes dates from a high antiquity, and a few of the more ancient parts of its temples are from the time of the Eleventh Dynasty, about 2500 B.C.; but under the Pharaohs of the Nineteenth Dynasty (about 1400 B.C.), Seti I. and Rameses II., etc., the chief seat of government was transferred from Memphis to Thebes, and the city was embellished with the magnificent temples of which the ruins now remain. The great group of Karnac alone is nearly a mile long and one-third of a mile wide, and comprises a whole assemblage of temples connected together by avenues of sphinxes. These buildings are mostly far too complicated and elaborate to describe in the limits of a single paper. Moreover, they show in many instances a departure from the original and simple plan of the early temples dedicated to the gods; the monarchs of this period would seem to have been almost intoxicated by the grandeur of the Empire and the extent of its foreign conquests, and the temples are covered with inscriptions of their own glorious doings, and, though the credit of them is all ascribed to the gods, the prevailing sentiment seems their own glorification.

the Egyptians regarded themselves as the keepers of the sacred plans of the religious buildings, which were handed down by writing and tradition from the most ancient times, and were not deviated from in any essential particular; we may, therefore, regard them as models of the ancient temples which existed from the earliest times, and it is interesting to notice many features in common between them and the Tabernacle erected by Moses by divine command and the temples of Ezekiel and Herod, and also the temples of the Greeks and Romans; there is as much similarity in the plan and arrangement of the great temples of Egypt as there is between the different cathedrals of the Christian Church. This temple of Denderah was dedicated to Hathor.

EGYPTIAN MYTHOLOGY.

Egyptian mythology is complicated by the fact that in various localities different names are applied to the same idea. The fundamental principle seems to have been to regard the heavenly bodies and powers of nature as symbols of the attributes of the Deity, and in most localities there is a divine Trinity. First, there is the masculine or creative principle symbolized by the sun, and called Ra-Harmachis at Heliopolis, Amen-Ra at Thebes, and so on; and in the philosophical idea representing the powers of goodness and light as opposed to evil and darkness. Secondly, there is the feminine or receptive and maternal principle symbolized by the moon and stars, and called Isis, Hathor, Muth, and several other names; and in the philosophical idea representing truth and faith, which keep alive and preserve the powers of goodness in states of decline symbolized by the night. Finally, as the result of a marriage or union between these two, there follows the third principle, the new-born day,

represented by the sun rising again and called Horus; and in the philosophical idea representing the resurrection, and regeneration, and the dawn of a new era of religion and civilization in the world. The ceremonies and processions which took place in the temples would appear to have been theatrical representations of what takes place in nature; each hour and day being symbolized as a separate deity, and the great event being the triumph of the sun over the powers of darkness and its bursting forth in renewed splendor at the opening of day.

There was probably an entrance court before the Temple of Hathor at Denderah, but if so it has been destroyed, and now one enters directly into a hall or porch supported by twenty-four columns; this is the Hypostyle Hall or Khent Hall—that is, Front Room. It is 143 feet broad, 80 feet deep, and about 50 feet high; it is a most noble apartment of harmonious proportions, and at once strikes the beholder with its grandeur; the walls are decorated with reliefs recording the various Pharaohs who built or restored the temple.

The ceiling represents the firmament and stars. Passing through this room, with its beautiful and massive columns covered with inscriptions, we proceed along the central axis of the temple into the Hall of the Appearance, so called because the statue of Hathor, "the golden-rayed," was brought on festive occasions from the Holy of Holies in the rear into this hall to be exhibited to the people, who did not advance beyond the Front Room; this room is 45 feet 6 inches square, and the ceiling is supported by six columns.

There were three small rooms on each side of the Hall of Appearance; one of those on the left side was the temple laboratory, where the incense, oils and ointments were prepared for the temple services, as the inscriptions thereon show. The second room is called the Assembly Room, and it is supposed the offerings were placed here on the festive days. The third room afforded a passage out of the temple. One room on the right, or west side, was called the Silver Room, and contained the jewels and ornaments of the divine image and temple utensils of costly materials, as shown in the inscription, which gives the uses of the room. The second room formed an exit from the temple on that side; the third room formed a sort of ante-room to the stair leading to the roof on that side.

Following the main axis of the temple, the next room is called the Hall of the Altar, immediately behind the Hall of the Appearance. On the left from this small ante-room leads to a long straight staircase ascending to the roof. There is also a room on this side called the Room of Purification, probably used in the preparation of festival ceremonies. On the other side is another staircase, of short flights, winding round a square with landings at the angles and ascending to the roof; the inscriptions on these rooms and staircases refer to the great New Year's Festival, on which occasion there was a solemn procession of the priests carrying images of the deity through the temple and afterward to the roof. On the roof is a small temple, from which the rising sun or the moon and the stars could be seen, and which presumably formed the goal of the procession before proceeding down the other staircase. The next room in the center of the temple axis behind the Hall of the Altar is called the "Hall of the Cycle of the Gods," or the "Middle Hall," and this is immediately in front of the cellar, adytum, or Holy of Holies. This sanctuary is surrounded by a passage round which are a series of small rooms used in the services of the temple.

Next to the dwelling of Hathor is "the Chamber of Flames," where the goddess is represented exterminating evil with fire: the next is called the "Throne Room of Ra"—the Sun—where the Pharaoh (who represented the deity on earth) is shown destroying a crocodile (evil) with his lance. On the west side are the "Room of Purification" and "the Room of a Necklace," where the king is shown presenting a necklace to Hathor. In the thickness of the walls of the temple are twelve crypts or secret chambers, in which, it is supposed, the treasures were kept, and the entrances to which were ingeniously concealed. On the roof were six rooms, three on the east and three on the west side, devoted to the worship of the slain and risen Osiris, as shown by the inscriptions.

I have passed by Abydos, where there are interesting mortuary buildings with some of the most beautiful sculptures of Egypt, dating from the time of Seti I.; and shortly above Denderah we come to Thebes, with the great temples of Karnak and Luxor. It is quite impossible in the limits of one evening to describe these in detail.

Almost all the temples on the west bank of the river were mortuary buildings, the west or setting sun being devoted to the dead.

ESNEH.

We next make a stop at Esneh, 484 miles above Cairo, where are the remains of the Hypostyle, or Front Room, corresponding with the similar apartment already described for Denderah; it is a very noble specimen, in excellent preservation. The size of the hall is 103 feet by 52½ feet, and is supported by twenty-four columns 37 feet high. There are high abaci over the capitals of the columns, on which rests the massive architraves, and again on these the roofing blocks, each varying block from 22 feet to 26 feet long and 6 feet 6 inches wide. It is calculated that there are 110,000 cubic feet of sandstone in this hall alone, and the whole of the interior is covered with inscriptions. According to these, the hall was founded not later than Totmes (Eighteenth Dynasty) and afterward rebuilt by the Ptolemies; it was dedicated to the ram-headed Khnum-Ra, one of the representatives of the sun god, and signifying the union between the rising and setting sun.

The hall is remarkable for the great beauty of the capitals of its columns, which differ from one another, but are not discordant. The sculptor has derived his inspiration from the lotus, palm, and other foliage.

EDFU.

A few miles above Esneh is Edfu, a little village in which stands the most complete specimen extant of an ancient Egyptian temple. The plan is almost the same as that at Denderah, with the addition of a large court surrounded by a colonnade in front of the temple, entered by a huge pylon or gateway, with two

pyramidically-shaped massive towers, which originally formed the main entrance to all Egyptian temples. There is also a girdle or encircling wall going round the whole temple and forming an outer protection, which probably originally existed round most Egyptian temples. The pylons in front, or "watch towers," as they are called in the inscriptions, are 100 feet high; an easy staircase surrounded with good hewn stone in large blocks in the pylon ascends to the summit, from which a magnificent view of the winding Nile is obtained. In front of the pylons are four vertical deep niches, in which were placed the higher flagstaffs, covered with copper, as the inscriptions tell us, "to avert the storms of heaven"; in other words, they acted as lightning conductors as well as flagstaffs, a proof of the scientific attainments of the Egyptians.

The open court in front of this temple (which is wanting in Denderah) is spacious and open to the sky, paved with flags and surrounded by thirty-two columns on the south or front, the east and west sides forming a colonnade. The temple itself is sacred to Horus (the sun at his rising). The orientation is exactly the opposite to that at the Temple of Denderah, the front of which faces north, whereas this temple faces south; that is, it faces the position of the sun during the daytime, whereas the one at Denderah, dedicated to the gods and goddesses of night, faces the position of the sun in the nether world, according to Egyptian ideas, during the night. The temple was rebuilt during the reigns of the Ptolemies, but the inscriptions inform us that it was carried out according to the plan of the great writing that fell from heaven to the north of Memphis. It is further stated that the Great Hall was built according to the arrangements of temples written by Kherheb Imhotep, son of the god Ptah; this shows that the Egyptians, in the arrangement of their temples, rigidly adhered to the traditions handed down to them from antiquity and preserved among them in writing. As at Denderah, a history of this particular temple and a description of the rooms and the uses to which they were put is given in inscriptions on the walls. From the foundation of the new temple to its completion and the festival entry of the Deity (B. C. 142) was a period of ninety-five years. The hall following the front room at Denderah (a temple sacred to the gods of the night) is called the "Hall of the Appearance," and the next room the "Hall of the Altar"; then comes the "Hall of the Cycle of the Gods." I suggest that this is because after the sun has run his course, at night he appears in the hall to the worshippers in all his glory. Hathor being on such occasions called the Golden Beamed and the Sun Goddess, and all the powers of heaven are, as it were, awake to their duties; but the corresponding rooms at the Temple of Horus (a god of day), at Edfu are called the "Festal Hall" and the "Hall of the Repose of the Gods," which seem to indicate the refreshment and repose of the deities after the day's work is done.

Following the front court, we come upon the Hypostyle Hall, or front room, which forms the first room at Denderah as it now stands. This hall contains, against the front wall and between the pillars, two little rooms, one on each side like chapels, which we learn from the inscriptions were intended, the one on the left as an incense chamber to hold the incense and holy water required on religious festivals, and the one on the right as a chamber or safe for the sacred rolls and books of the temple, a catalogue being given on the walls. The ceiling of this hall is covered with astronomical representations.

A few miles above Edfu the channel of the Nile contracts and passes through a chain of sandstone mountains, which are extensively quarried. Vast chasms are cut down through the mountains in every direction as if they had been sawn, the tool marks of some such instrument as a saw being plainly visible. These were the quarries of ancient Thebes, and extend for miles.

Forty miles above Edfu is the beautiful Temple of Kôm Ombo. The peculiarity of the plan is that it is a double temple, with twin entrances side by side, and double twin suites of rooms throughout; the left half on the left is sacred to Horus, god of the day, and the right half to Sebek, the crocodile-headed god (a god of the night). Like the other temples we have been examining, there has been a restoration under the Ptolemies of an ancient building which stood on the site.

A short distance farther south brought us to the first cataract, the southern end of Egypt proper, near which are extensive granite quarries. It is said that all the obelisks, granite blocks, and pillars found in Egypt came from these quarries; the labor of working them, and taking them down to the river and to their various destinations, must have been almost incredible.

Above the cataract and quarries is the picturesque island of Philæ, crowned with temples, walls, and colonnades. The island is about a quarter of a mile long, and 150 yards broad; the Temple of Isis, with its accessories, occupies about half the length of the island. The temple was built at various times, and owes its charm not only to the gracefulness of its architecture, but also to the beauty of its situation. The inner part of the temple, the first apartment of which is an elegant hypostyle consisting of an uncovered forecourt and a covered hall beyond, with four columns on each side, is one of the most beautiful halls in Egypt, not only on account of its well-balanced proportions and admirable preservation, but especially on account of the beautiful and delicate coloring, which, being very little perished, conveys a better idea than almost any other example of what the gorgeous effect of these buildings must have been when their colors were fresh and unfaded.

On the east side of the island is an elegant little temple, or pavilion, which goes by the name of "Pharaoh's bed," with five columns on each side and four at each end, and half enclosed; it is a favorite subject with painters on account of its elegant form and suitability to the landscape, though the inscriptions within it are of no importance.—Building Journal.

Guatemalan Cattle Exports.—Under date of June 16, 1900, Minister Hunter sends from Guatemala copy of an executive decree of the 9th instant, increasing the tax upon each head of bovine cattle exported from the Republic to \$70.

SELECTED FORMULÆ.

1. Indelible Ink.—So-called indelible ink for marking cotton or linen is usually made from a salt of silver, the mark in this case being black. The nitrate is taken as a base and alkalies are added. A mixture of this kind, in which sodium hydrate (caustic soda) was used, exploded with great violence, and explosions are reported of other similar inks, the precise formulas of which we do not know. This accident has fortunately been rare, and unfortunately lacks convincing explanation, so that it is not clear as to what precautions or modifications are necessary.

In view of the difficulty it would be as well to try the following:

WOODHOUSE'S INDELIBLE INK.

Nitrate of silver.....	1 ounce.
Infusion of nutgalls.....	2 drachms.
Gum arabic.....	2 "
Water.....	8 ounces.

Dissolve the nitrate of silver in 4 ounces of water. In the remainder of the water dissolve the acacia and add the infusion. Then mix the two liquids.

The infusion of nutgalls is made by pouring 1 ounce of boiling water upon 30 grains of powdered nutgalls.

A more modern and presumably cheaper indelible ink is made by the following formula, which is not so convenient, however, in use, as will be seen by the directions:

INDELIBLE INK WITHOUT SILVER.

A.	
Anilin hydrochlorate.....	20 parts.
Mucilage of gum arabic.....	25 "
Glycerin.....	15 "
Water.....	100 "
B.	
Copper chloride.....	3 "
Sodium chlorate.....	3 "
Ammonium chloride.....	2 "
Water.....	40 "

Mix equal parts of the two solutions just before wanted for use.

By pressing the writing with a hot iron the development of a black color is hastened.

RED INDELIBLE INK.

It is said that by proceeding according to the following formula, an intense purple-red color may be produced on fabrics, which is indelible in the customary sense of the word:

I.	
Sodium carbonate.....	3 drachms.
Gum arabic.....	3 "
Water.....	12 "
II.	
Platinic chloride.....	1 drachm.
Distilled water.....	2 ounces.

III.	
Stannous chloride.....	1 drachm.
Distilled water.....	4 drachms.

Moisten the place to be written upon with No. 1 and rub a warm iron over it until dry; then write with No. 2, and, when dry, moisten with No. 3. An intense and beautiful purple-red color is produced in this way.

A very rich purple color—the purple of Cassius—may be produced by substituting a solution of gold chloride for the platinic chloride in the above formula.—Drug-gists' Circular.

A Simple Beetle Trap.—Mons. Desiré Maes gives the following simple method of making a beetle-trap: Into a china wash-hand basin, half filled with water, pour a glass of beer; cover the basin with a newspaper, in the center of which a small round hole is cut. Place it so that the edges of the paper lie on the floor and the hole is over the center of the basin. At night the beetles, attracted by the smell of beer, climb the paper and fall through the hole into the liquid.

Remedy for the Carpet Beetle.—A suburban entomologist has discovered that formaldehyde is a sure destroyer of the carpet beetle, known as Buffalo bug. This insect is, in this locality, rapidly giving the moth points in destructiveness. It eats any textile fabric, silk, linen or wool, and has defied all known methods of annihilation. Method: Close your apartment or closet, and generate your gas from either methyl alcohol or solution of formaldehyde.—Popular Science.

Russet Shoe Polish.—

THE LIQUID.	
Beeswax, yellow.....	2 ounces.
Linseed oil.....	3 "
Oil turpentine.....	10 "
Dissolve by heat of a water bath and add	
Soap shavings, hard yellow.....	1½ "
Dissolve in	
Hot water.....	14 "

THE PASTE.	
Beeswax, yellow.....	1 ounce.
Palm oil.....	1 "
Oil turpentine.....	3 "
Melt on a water bath.	

Yellow Dressing for Leather.—

Water.....	162.5 parts.
Borax.....	5 "
Aniline "leather brown," water	
soluble.....	1 "
Orange shellac.....	15 "
Ammonia water.....	1.25 "
Distilled water.....	1.25 "

Bring the water to a boil, add the borax and dissolve, and to the solution add, a small quantity at a time, the aniline color (which should be free from iron). When the water is boiling actively add the shellac, a little at a time, stirring vigorously while doing so. Let boil for ten or fifteen minutes, pour off into a clean vessel, and allow the mixture to cool down. Mix the ammonia and water, and when the mass is quite cool, stir the mixture well in. Other colors (water soluble) may be used instead of the leather brown, a little experimenting showing the amount to be employed.—Pharmaceutical Era.