

## 44291 to 44294—Continued.

44292. *BRASSICA PEKINENSIS* (Lour.) Gagn. Brassicaceæ. **Fai ts'ai.**

“(No. 2376a. Ansuhs'en, Chihli Province, China, January 18, 1917.) *Pai ts'ai*, meaning ‘white vegetable.’ A heavy quality of white winter *pai ts'ai*, much in demand and generally disposed of by the growers to private customers before the end of December. Needs a rich soil and no lack of moisture to become tender and sweet.” (Meyer.)

44293. *RAPHANUS SATIVUS* L. Brassicaceæ. **Radish.**

“(No. 2377a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Teng tung hung lo po*, meaning ‘lantern red root,’ referring to the resemblance of the root to a Chinese or Japanese flat lantern. A large, flat red, winter radish, said to grow as heavy as 5 catties apiece. Needs rich, well-drained soil to do well. Sow out in summer, not in spring.” (Meyer.)

44294. *ALLIUM FISTULOSUM* L. Liliaceæ. **Leek.**

“(No. 2378a. Ansuhsien, Chihli Province, China, January 18, 1917.) *Ta t'ou st'ung*, meaning ‘large-headed leek.’ A peculiar variety or Chinese winter leek of very short growth, looking almost like a slender onion. Said to be of very good flavor; possesses also good shipping and keeping qualities. Does best in light, rich, moisture-retaining soil.” (Meyer.)

44295. *PAVETTA ZIMMERMANNIANA* Valet. Rubiaceæ.

From Buitenzorg, Java. Presented by Dr. J. C. Koningsberger, director, Botanic Gardens. Received March 19, 1917.

A small rubiaceous tree or shrub, with opposite, nearly elliptic leaves and clusters of small slender-tubed white flowers.

“The remarkable researches of Zimmerman and Faber detailed in the *Jahrbücher für Wissenschaftliche Botanik*, vol. 51, p. 285, 1912, and vol. 54, p. 243, 1914, make this species of unusual interest. Faber has proved that the leaves of this and of several other species of *Pavetta*, *Psychotria*, and possibly other genera of the Rubiaceæ contain colonies of a nonmotile, nitrogen-fixing bacterium which he names *Mycobacterium rubiacearum*. The bacteria of this species almost invariably inhabit the micropyle of the young seed and when the seed germinates grow through certain stomata of the very young leaves and into the intracellular spaces formed in the leaf tissues around these stomata. Cavities are formed through the growth of the epidermal cells which later close entirely and make bacterial nodules which are deeply embedded in the leaf tissues. A single leaf may have several dozen of these symbiotic bacterial nodules.

“Faber was able, by treating the seeds with hot water and a sublimate solution, to kill the inhabiting myco-bacteria and, later, to infect part of the seedlings grown from these seeds with pure cultures of the bacterium. The artificially infected seedlings grown in soil free from combined nitrogen grew well and remained healthy for four months, whereas those not so infected turned yellowish white and died in three or four weeks. The plants from unsterilized seeds produced leaves bearing many more bacterial nodules than did those from sterilized seeds which were later artificially inoculated. In view of the fact that these rubiaceous plants with bacterial nodule-bearing leaves occur in many parts of the Tropics and that in India, at least, the value of their leaves for manure has long been recognized, and considering the value of nitro-