

[Headband from Galen: De Simplicium, Venetiis, apud Iuntas, 1625.]

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CHINESE DRUG STORES

By K. K. CHEN, PH.D.

PEKING, CHINA

ORIGIN. The systematic use of drugs in China dates back to Emperor Shen Nung (3217–3077 B.C.), who tasted one hundred herbs and probably wrote the Pentsao,[1] which with subsequent additions serves to this day as the Chinese Dispensatory. A little later Lei Kung, premier to Emperor Huang Ti (2697–2597 B.C.), introduced methods of roasting and cooking to activate the drugs or to alter their action and Yi Yin, premier to Emperor Tang (1783–1760 B.C.), first prepared decoctions and infusions to facilitate oral administration. In those days, the physician collected, prepared and administered his own drugs. But the number of approved drugs was increasing day by day, and the separation of pharmacy from medicine followed as a natural result. Han K'ang, who lived in Eastern Han Dynasty (22–219 A.D.), appeared to be the first druggist, making displays of his drugs on market, and was noted for his honesty in the business. Drug stores were definitely in existence during the Sung dynasty (960–1276 A.D.), for Lu Chiu-Yuan, a philosopher, in his writings, spoke well of his brother as the proprietor of a drug store. Other writers in the same dynasty made similar remarks concerning the establishment of drug stores. Today Chinese physicians depend entirely on drug stores for filling and dispensing their prescriptions.

PHARMACY AS A PROFESSION. The principles of the keeper of a Chinese drug store are as a rule very high. Tablets bearing the characters which express love of humanity are prominently displayed as mottoes, and a prescription for the treatment of an emergency case is cheerfully filled at any hour of the night. The pharmacist, not bound by any legal restrictions, fears that the wrath of Heaven will be visited on himself and his descendants if he cheats his customers; and this proves a sufficient motive to maintain a high standard of service. It is worth noting that opium, which has become such a curse to China, is not sold in drug shops, and toxic substances

[1] It is generally believed that the Pentsao was actually written by Shen Nung. It contained 360 drugs, divided into "superior," "medium" and "inferior" classes.

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such as arsenic, nux vomica, croton seeds and so forth cannot be purchased at any price except by prescription of a physician. This is in sharp contrast with "modern" pharmacies in China, in which morphine preparations and other narcotics can always be purchased under some fancy name, and which are taking on more and more the characteristics of department stores. But the simple, old, Chinese drug stores, while more moral and specialized than their competitors from the West, are bound to perish ultimately unless radical changes are made, for modern medicine is rapidly replacing the Chinese materia medica.



FIG. 1. TUNG JEN T'ANG, ONE OF THE OLDEST DRUG-STORES AND THE MOST FAMOUS ONE IN PEKING AND IN CHINA; IN FACT, THE MERCK OF CHINA. IT WAS ESTABLISHED SOME TIME IN THE MING DYNASTY, 1368–1643 A.D., AND HAS BEEN CONTINUOUSLY UNDER THE CONTROL OF A SINGLE FAMILY. THE PRESENT OWNER CANNOT TELL EXACTLY IN WHICH YEAR THE STORE WAS FOUNDED. THE CROWD OF CUSTOMERS, AS SHOWN HERE, ATTENDS FROM EARLY IN THE MORNING UNTIL LATE IN THE EVENING, FOR THE WHOLE YEAR ROUND.

ORGANIZATION OF THE DRUG STORE. The proprietor is the center of importance, the success or failure of the business depending entirely on his ability. He supervises and is responsible for everything that is done in the shop. Next to him is a man of considerable experience and ability who attends to the accounts and to the purchasing of drugs, at an annual salary of two or three hundred dollars (silver) though he in addition gets a share in the profits of the shop which may exceed his nominal salary. Then there will be one or more "teachers," whose status is analogous to that of graduate pharmacists, on an annual salary of one hundred or more dollars; their chief duty is to fill the prescriptions. The apprentices comprise the lowest rank of the personnel; they prepare the crude drugs for selling, and are required to keep the premises clean. Apprentices receive practically nothing except a small bonus from the profits according to the good will of the proprietor and the character of their services. After three years the apprentices become teachers and begin their professional career as such. The senior members of the firm above the rank of teachers live with



FIG. 2. A RURAL DRUG-STORE, THE PROPRIETOR OF WHICH ALLOWS THE DISPLAY OF SOCKS FOR SALE BY HIS NEIGHBOR IN THE FRONT OF HIS PRESCRIPTION COUNTER. THE SIGNS ARE ALSO SHOWN.

their families in their own homes, while the teachers and apprentices are given free lodgings in the shop. All of the personnel are provided with food by the proprietor without charge. The working hours are not sharply defined, the senior officers usually arriving at seven or eight in the morning and leaving at six or seven in the evening. Work proceeds on Sundays as on other days and there are no holidays excepting at the Chinese New Year Festival, when the store is partly or completely closed for ten to fifteen days.

SIZE OF THE DRUG STORE. The store usually occupies one to three front rooms (Figs. 1 and 2). No show window is provided, but the permanent signs such as: "Most reliable drugs from all provinces";

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"Ginseng and Deerhorn a speciality"; and so forth serve as the only advertisements. One or more storerooms are provided for crude drugs, a kitchen for cooking, roasting, and distilling herbs, sometimes a small garden for cultivating common native drugs, and bedrooms for the teachers and apprentices.

INVENTORY. The prescription counter occupies the very front of the front room, while the money counter often stays in the

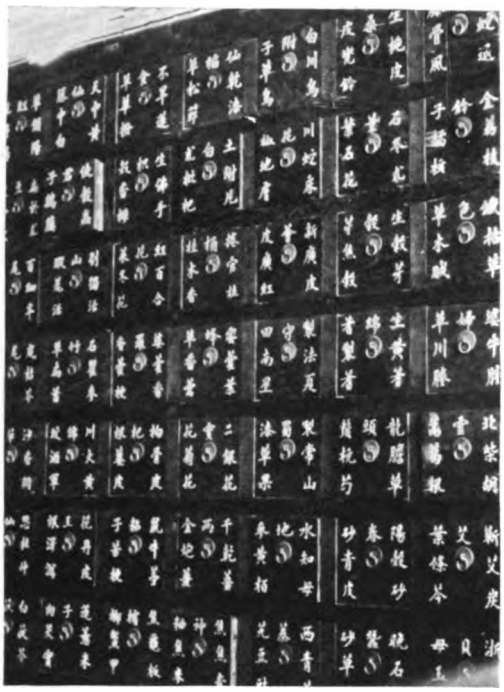

FIG. 3. ROWS OF DRAWERS WITH PERMANENT LABELS FOR THE KEEPING OF HERBACEOUS DRUGS.

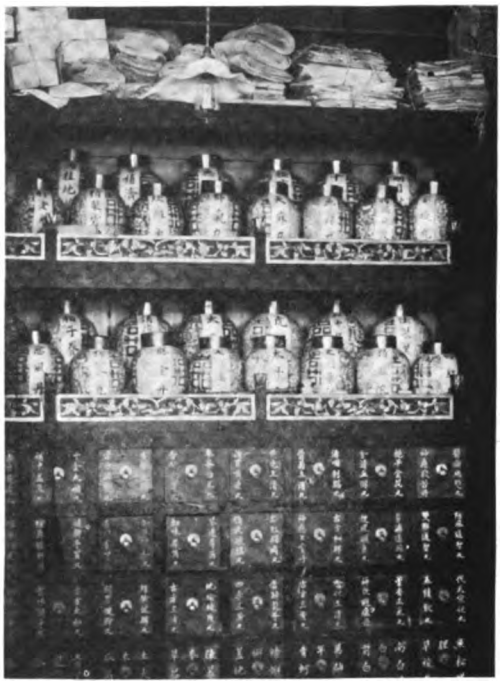

FIG. 4. PORCELAIN CONTAINERS WITH LEAD LIDS AND SPECIAL LABELS FOR THE KEEPING OF PILLS, MIXTURES, ETC.

rear, for greater safety perhaps. Numerous herbaceous drugs are placed in rows of labeled drawers (Fig. 3) built against the side wall. On the top shelves, above these drawers, are porcelain containers with lead lids (Figs. 4 and 5) in which are kept powdered drugs, pills, mixtures and minerals. Toxic substances such as arsenic trioxide are stored in a special box which is usually locked and hidden away. Valuable drugs like ginseng are protected from moulds by storing them in large desiccators containing lime as the dehydrating agent. Other furnishings of the front room consist of a few chairs and one or more tables.

As most of the crude drugs require some preparation before they can be dispensed, a certain amount of apparatus is required. Thus cooking, roasting, distilling, or coating with honey are done in a pan on a stove, the heat being generated by burning either rice straw or coal. Some roots or stems are cut or sliced with a special cutter (Fig. 8), while others are pulverized in an iron boat (Fig. 9), with a stone mill (Fig. 10), or with a bronze mortar and pestle (Fig. 7). When a fine powder is desired, a circular sieve made of silk about eighteen inches in diameter is used. Some drugs, such as almond seeds, are bruised with a wooden stick. Trituration is done with a porcelain mortar and pestle, differing little from the Western type.

SOURCES OF DRUGS. Most of the dry, undivided drugs are supplied by wholesale agents located in large cities such as Shanghai, Hankow and Peking. Some of them which are produced locally are bought from the person who collects them, usually a farmer. The proprietor himself may raise some fresh drugs, such as lotus leaves, which may be demanded, in the small garden connected with the store.

PREPARATIONS. In spite of lack of machinery, the Chinese druggist can skilfully

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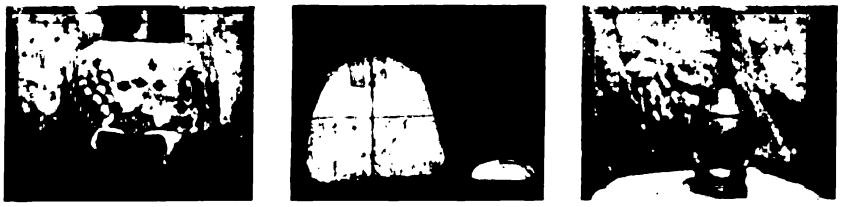
make several forms of medication. Thus he has for sale powders, "adhesive plasters" made of vegetable resin mixed with some active drugs, pills and ointments to be ordered in advance. In summertime, he distills some volatile plants such as peppermint, wild rose and so forth, to make waters which are believed to have a cooling effect; while in winter when everybody needs a "tonic," he prepares semisolid extracts from individual prescriptions, by boiling the drugs with water and concentrating the fluid to the desired consistency. It is from these extracts that most of the income of the store is drawn. Frequently a galenical preparation from some secret prescription, handed to the store by a famous doctor through friendship or other personal connection, is sold. This often makes the store popular and draws



5 6 7

FIG. 5. A PORCELAIN CONTAINER. FIG. 6. A PACKAGE OF DRUGS FILLED FROM A PRESCRIPTION. THE BIG ONE CONTAINS SOME THIRTEEN SMALL ONES, ONE OF WHICH IS ALSO SHOWN. FIG. 7. A BRONZE MORTAR AND PESTLE.

people even from remote regions. It is interesting to note that the drug store does not pretend to sell "Elixir of Life" as the European apothecaries used to do.

PRESCRIPTION. The form of prescriptions is shown in Figure 11. Each can be arbitrarily divided into superscription, inscription, subscription, signatura and signature. The superscription consists of the name and sex of the patient and the date of visit. It contains no word corresponding to Latin *recipe* or French *prenez*, but instead, a statement of symptoms, diagnosis and method of treatment usually based on ancient authorities. It is this part that can and often does make the prescription several pages long. The more important the patient is, such as the Emperor in previous times, the longer the statement will be (Fig. 11). The inscription usually consists of nine to thirteen crude drugs with proper dosage. Some of them are used as the bases, others as adjuvants, still others as correctives. The subscription is brief, and if any, is placed beside the individual drug. For instance, if almond seeds should be crushed, the direction is written right with this drug and not at the end of the prescription. Much of the signatura is assumed to be understood. Thus the patient knows that he should make a decoction out of these drugs at his home, and drink it. The time of medication and interval between doses are left to the patient's discretion. The number of doses (i.e., the number of new decoctions) is sometimes written in the prescription, but may not be mentioned, in which case the patient knows that it should not exceed three. Incidental directions to the patient are sometimes included, as for example when certain drugs are to be wrapped in silk in the preparation of the decoction. The signature of the doctor is ordinarily printed at the end as a sort of inverted letter head. The names of the physician's students also appear, as a proof of his popularity.

MEASURES AND WEIGHTS. As the Chinese drug store seldom sells any liquid preparation, measures are not in great demand. The weights are the ones used by the general public. Scales are universally adopted. As shown in Table 1, the weighing system goes by decimal units, similar to the metric system, except that one catty is made of sixteen liang:

With slight modification, the Chinese system can be easily made comparable with

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the metric system, an advantage which cannot be obtained in the avoirdupois system. On one occasion the writer had a chance to calibrate some of the weights used by a druggist and found the error not alarmingly great, as seen in Table II.

METHODS OF COMPOUNDNG A PRESCRIPTION. If one is confused with incompatibilities and technology in European

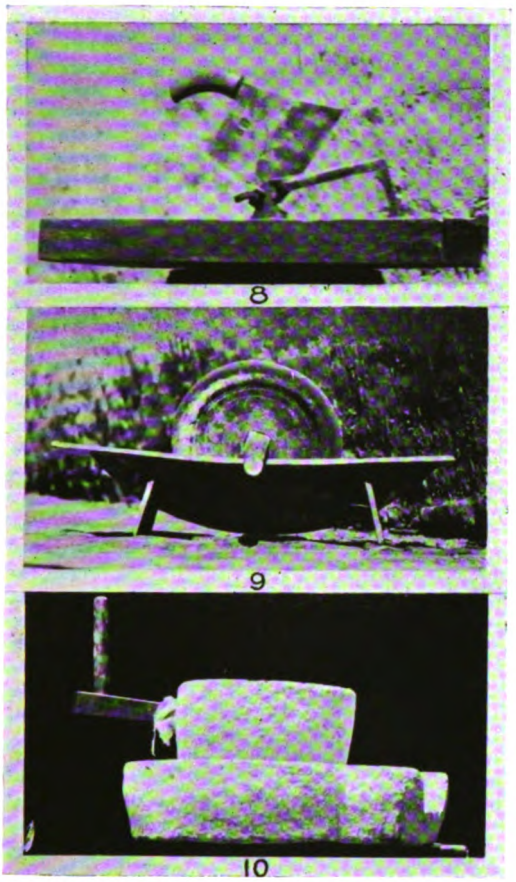
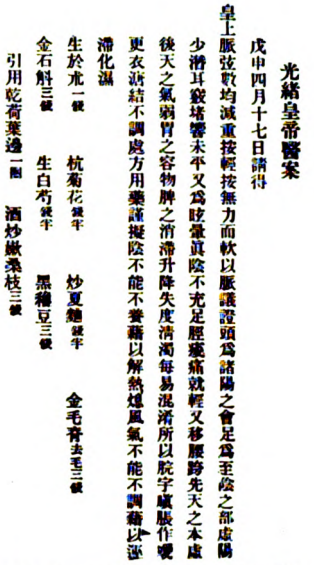


FIG. 8. A CUTTER.
FIG. 9. AN IRON BOAT WITH ITS ROLLER FOR PULVERIZING DRUGS.
FIG. 10. A STONE MILL.

pharmacy he should be a Chinese druggist. There is no text like the pharmacopeia to follow and there are no restrictive laws to obey. The Pentsao Kang Mu[2] is the dispensatory, but reference is seldom made to it. All the experience acquired is from the "teacher," and the knowledge of the latter is, in turn, obtained from his "teacher." The only essential part is to weigh the drugs

[2] Pentsao Kang Mu is a revision of Pentsao by Li Shih-Cheng in 1596, greatly enlarged, containing 1,871 drugs under sixty-two orders and sixteen classes, in fifty-two chapters.

and wrap them separately in home-made rice paper, the wrapping being done by folding one corner of a sheet, followed by two neighboring corners, and completed by



光緒皇帝醫案
戊申四月十七日請得
皇上脈弦數均減重按輕按無力而軟以脈議證頭爲諸陽之會足爲至陰之部虛陽
少潛耳竅堵響未平又爲眩暈眞陰不充足脛痠痛就輕又移腰跨先天之本虛
後天之氣弱胃之容物脾之消滯升降失度清濁每易混淆所以脘宇嗔脹作噯
更衣溏結不調處方用藥謹擬陰不能不養藉以解熱熄風氣不能不調藉以運
滯化濕
生於朮一錢　杭菊花錢半　炒夏麯錢半　金毛脊去毛三錢
金石斛三錢　生白芍錢半　黑穭豆三錢
引用乾荷葉邊一圈　酒炒嫩桑枝三錢

FIG. 11. A PRESCRIPTION FOR THE LATE EMPEROR KUANG HSU OF THE CH'ING DYNASTY, WRITTEN BY HIS COURT PHYSICIAN. IT WAS PHOTOGRAPHED FROM THE COLLECTION OF THAT DOCTOR'S PRESCRIPTIONS, PUBLISHED SOME TIME AGO. THE FOLLOWING IS A BRIEF TRANSLATION:

"HIS MAJESTY

17TH. OF THE 4TH. MONTH[3] 34TH. YEAR (1908).

THE PULSE TENSION IS STILL WEAK FELT EITHER BY HEAVY OR SLIGHT PRESSURE, WHICH SHOULD BE CAREFULLY CONSIDERED IN THE PRESENT ILLNESS. THE HEAD IS THE CENTER OF 'YANG' (MALE PRINCIPLE),[4] WHILE THE FEET THAT OF 'YIN' (FEMALE PRINCIPLE). DEFICIENCY IN 'YANG' RESULTS IN RINGING OF EARS AND DIZZINESS, WHILE DEFICIENCY IN 'YIN' RESULTS IN LAMENESS OF FEET, EXTENDING TO GROIN AND WAIST. PATIENT'S ANTENATAL CONSTRUCTION IS HARDLY SOLID AND HIS POSTNATAL VITALITY NOT ANY TOO STRONG. THE FUNCTION OF THE STOMACH IS TO TAKE FOOD AND THAT OF THE SPLEEN TO ELIMINATE THE STAGNATED RESIDUE FROM DIGESTION; WHENEVER THIS HARMONY IS DISTURBED, THERE IS CONTAMINATION OF THE NUTRITION BY THE WASTE PRODUCTS, RESULTING IN THE COMPLAINT OF DISTENSION, HICCOUGH, AND INTERMITTENT CONSTIPATION AND DIARRHEA. THE METHOD OF TREATMENT BY MEANS OF DRUGS CONSISTS OF FOSTERING 'YIN' TO REMOVE TROUBLE, AND OF HELPING VITALITY TO PROMOTE DIGESTION.

ARISTOLOCHIA RECURVILABRAE, RAW	1	CHIEN[5]
CHRYSANTHEMUM SINENSE, FROM HANCHOW	1½	CHIEN
LEAVEN, SUMMER, ROASTED	1½	CHIEN
POLYPODIUM BAROMETZ	3	CHIEN
DENDROBIUM NOBILE, GOLDEN VARIETY	3	CHIEN
PAEONIA ALBIFLORA, RAW	1½	CHIEN
LOTUS LEAF, MARGIN	1	CIRCLE
MULBERRY TWIGS, ROASTED WITH WINE	3	CHIEN

HIS OBEDIENT SERVANT,
LIEN-FONG CHEN, M.D."

slipping the fourth corner into the space formed by the adjacent corners, to make a

[3] The Chinese calendar is based on the lunar system.

[4] For the explanation of male and female principles, see Hsieh, E. T., *Anat. Rec.*, 1920–21, XX, 97.

[5] A Chinese unit of weight. For its metric equivalent see Table I.

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small square package (Fig. 6). These small packages are wrapped together in a truncated pyramid (Fig. 6) and tied. This finishes the story of filling a prescription.

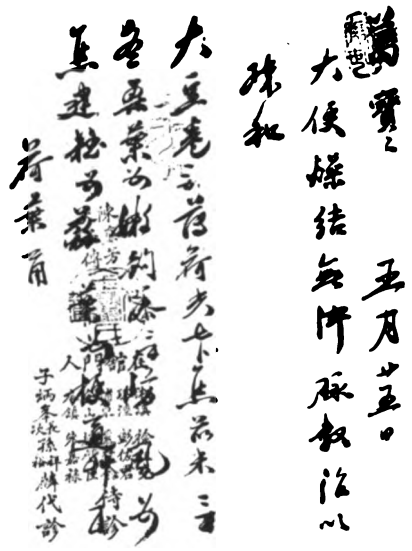

FIG. 12. A PRESCRIPTION FOR AN ORDINARY CITIZEN WRITTEN BY A DOCTOR, A PUPIL OF THE ABOVE-MENTIONED COURT PHYSICIAN, WHICH IS TRANSLATED AS FOLLOWS:

"MISS KE. 25TH. OF THE 5TH. MONTH.
FECES HARD AND DRY, WITHOUT SWEATING, PULSE FAST. TREATMENT FOLLOWS THE PRINCIPLE OF HARMONY.

BEAN SPROUT	3 CHIEN
PEPPERMINT LEAVES	7 FEN
COIX LACRYMA, ROASTED	3 CHIEN
MULBERRY LEAVES, WINTER	1½ CHIEN
NAUCLEA RHYNOPHYLLA, YOUNG	3 CHIEN
SILER DIVERICATUM	1½ CHIEN
CHEAN CHU, ROASTED (A MIXTURE OF HERBS, WELL KNOWN TO DRUGGIST)	1½ CHIEN
PERILLA NANKINENSIS, LEAVES	1½ CHIEN
AKEBIA QUINATA, STEMS	1 CHIEN
LOTUS LEAF	1 CORNER

NAN-SUNG KING, M.D., PUPIL OF DR. LIEN-FONG CHEN (ACCOMPANIED BY THE NAMES OF HIS SEVEN STUDENTS, HIS SON, AND HIS TWO GRANDSONS)."

The prescription *per se* is returned to the patient, and is not kept though it is often copied by the druggist.

COOPERATION AMONG DRUGGISTS. There is no organization among the druggists, corresponding to the National Pharmaceutical Association; in fact little relation exists among men of the same profession. The most recent development of a uniting spirit is exhibited in the different organizations of local druggists, although the only function of such groups is to standardize the prices of drugs. This spirit of individualism of the Chinese druggists is in strong contrast with the tendency of cooperation among the European apothecaries who in the Middle Ages had already formed themselves into guilds. Thus in England as early as 1180 the pepperers organized into a guild, and in France the spicers and apothecaries became one of the guilds of "avoir du pois," which was changed to *Collège de Pharmacie* in 1780. In course of time, there must be reformation and unification of Chinese pharmacy. Whether it will be brought about by the state control as in Germany or by voluntary organization as is the case with the Central Pharmacy of France is a question remaining to be seen. The former seems to be more probable.

ACKNOWLEDGMENTS

The author wishes to acknowledge his indebtedness to Mr. Ma Kiam, head of the department of Chinese, Peking Union Medical College, for his assistance in collecting material for the origin of the Chinese drug store and in the translation of the two

TABLE I

Chinese weights	Metric equivalent	Apothecarian equivalent
1 Wherl =	0.000037301 gram[6] =	0.000575629032 grain
10 Wherl = 1 Ssu =	0.000373010 gram =	0.005756290320 grain
10 Ssu = 1 Hao =	0.003730100 gram =	0.057562903200 grain
10 Hao = 1 Li =	0.037301000 gram =	0.575629032000 grain
10 Li = 1 Fen =	0.373010000 gram =	5.756290320000 grain
10 Fen = 1 Chien =	3.730100000 gram =	57.562903200000 grain
10 Chien = 1 Liang =	37.301000000 gram =	575.629032000000 grain
16 Liang = 1 Chin (Catty) =	596.816000000 gram =	9210.064512000000 grain

[6] These small figures are only nominal.

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TABLE II

Chinese Weights	Actual values in grams	Correct values in grams	Difference in grams	Per cent of error
6 Fen	2.2350	2.2381	−0.0031	−0.14
8 Fen	3.0557	2.9841	+0.0716	+2.40
3 Chien	10.9633	11.1903	−0.2270	−2.03
6 Chien	22.4726	22.3806	+0.0920	+0.41
7 Chien	25.8404	26.1107	−0.2703	−1.04
8 Chien	29.9688	29.8408	+0.1280	+0.43
9 Chien	33.6978	33.5709	+0.1269	+0.38
1 Liang	37.2284	37.3010	−0.0726	−0.19
2 Liang	74.9980	74.6020	+0.3960	+0.53

prescriptions. He also wishes to express his gratitude to his former colleague, Dr. Carl F. Schmidt, for his valuable help and frank criticism in the presentation of this paper. For historical dates, botanical names, equivalents of Chinese weights, and so forth, the following books have been freely consulted:

Chinese Dictionary. Shanghai, 1915.

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STEPHEN HALES*

(1677–1761)

By G. E. BURGET

PORTLAND, ORE.

STEPHEN HALES was born at Bekesbourne in Kent, September 7, 1677, the sixth son of Thomas and Mary Hales. Only meager information is obtainable in regard to his early life and training. In 1696, at the age of nineteen, he entered Bennet College, Cambridge. Although we have no definite record we may assume that he applied himself earnestly to the study of religion and natural philosophy. He took a Bachelor of Arts degree and was elected to a fellowship about 1702. In 1703 he was granted a Master of Arts degree. William Stukeley (1687–1765) afterwards M.D., F.R.S., went to the college in 1704. A friendship arose between him and Hales although Hales was Stukeley's senior by ten years. From Francis Darwin we learn that these two college friends roamed the surrounding country together. Hales carried an often-thumbed copy of Ray's "Catalogue of Plants." Everything from fossils to butterflies was eagerly studied by the young philosophers. They dissected frogs, dogs and other animals together. John Francis Vigani (1650–1712) who became the first professor of chemistry at Cambridge in 1703, seems to have attracted them. In a room at Trinity College, the laboratory of Sir Isaac Newton, they repaired to repeat some of Boyle's experiments and to watch the demonstrations of Vigani. They prepared various substances, "some of use, some of curiosity." Hales studied astronomy. He knew well the Newtonian System. While yet in college he constructed a machine of brass to show the movements of

* Read before the University of Oregon Medical History Club, Portland, Ore., November 21, 1924.

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