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Ka Puke Haumana 'o 'Anatomia, Mahele 1 = Students'
Materials, Anatomy, Part 1

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Ka Puke Haumāna ‘o ‘Anatomia, Māhele 1

E hō‘ike ana kēia māhele o ka puke pai i kekahi mau kumuhana na nā haumāna. E ho‘omaka ana me kekahi puke ha‘awina e pili ana i ka ‘anatomia i ho‘ohana mua ‘ia ma ke Kulanui o Hawai‘i ma Lahaina Luna.

He puke ha‘awina ‘ōlelo Pelekānia nō paha ka puke ‘o ‘Anatomia i kākau ‘ia e Jerome Smith a i pa‘i ‘ia ma Bosetona i ka makahiki 1834. He ho‘okahi wale nō kope o kā Smith i koe ma Hawai‘i nei, a ‘o ia paha kā ke Kauka Gerrit Judd kope pono‘i iho nō. Na ka Haukapila ‘o Straub ia kope i ‘ae ‘ia i ka Hale Waihona Puke Lapa‘au o Hawai‘i nāna i ‘ae ‘olu‘olu mai e pa‘i hou ‘ia kekahi o nā ‘ōlelo ma ke kolamu ‘ehā o kēia puke pai. Ua mana‘o ‘ia, ‘o kā ke Kauka Judd puke, he unuhi i kā Smith, akā, ke ho‘ohālikelike ‘ia nā kolamu o lalo iho nei, e ‘ike ‘ia auane‘i ka pili me ka pili ‘ole o nā puke ‘elua. (‘Okō‘a ka helu paukū ‘ana o ke kolamu ‘ekolu me ka ‘ehā, ‘oia ua ho‘opuka ‘ole ‘ia kekahi o kā Smith ma ‘ane‘i.) Me ia puke a Smith, ua ‘ae ‘olu‘olu pū mai ka Hale Waihona Puke Lapa‘au o Hawai‘i i ke kope o kā Judd puke a me nā ki‘i kikoho‘e o ia puke. Forbes 1088 (II:174–175); Judd/Bell/Murdoch 166 (59–61).

1. ANATOMIA.	1. ‘ANATOMIA.
HE PALAPALA IA E HOIKE AI	HE PALAPALA IA E HŌ‘IKE AI
I KE ANO	I KE ‘ANO
O KO KE KANAKA KINO.	O KO KE KANAKA KINO.
Ua kakauia ma ka olelo Hawai‘i, i mea e ao ai na haumana o ke Kula Nui, ma Lahainaluna.	Ua kākau ‘ia ma ka ‘ōlelo Hawai‘i i mea e a‘o ai nā haumāna o ke Kulanui ma Lahaina Luna.
OAHU: MEA PAIPALAPALA A NA MISIONARI. 1838.	O‘AHU: MEA PA‘I PALAPALA A NĀ MISIONARI. 1838.

Students' Materials, Anatomy, Part 1

This section of the journal will present materials for students. It begins with a textbook on anatomy originally used at the College of Hawai'i at Lahaina Luna (commonly known today as "Lahaina Luna School").

The book *Anatomy* (*Anatomia*) probably began as an English textbook written by Jerome Smith and published in Boston in 1834. Apparently only one copy of the Smith book exists in Hawai'i, and it may have been the one originally owned by the missionary doctor Gerrit Judd. It is owned today by Straub Hospital and is on loan to the Hawai'i Medical Library, which kindly made it available for partial reproduction in the fourth column. It has been thought that Judd's 1838 work on the same topic (*Anatomia*), published in Honolulu and presented in the first column, was a translation of Smith's book, although the comparison below shows instead that Judd based his work only loosely on Smith. (Paragraph numbers in the third and fourth columns do not match because not all of Smith's material is included here.) In addition to Smith's book, Straub Hospital and the Hawai'i Medical Library have also kindly made available their copy of Judd's book and their digital photographs of it. Forbes 1088 (II:174–175); Judd/Bell/Murdoch 166 (59–61).

1.	ANATOMY.	1.	THE
	A DOCUMENT SHOWING		CLASS-BOOK OF
			ANATOMY,
	THE NATURE		DESIGNED FOR SCHOOLS.
	OF THE HUMAN BODY.		EXPLANATORY OF THE
			FIRST PRINCIPLES
			OF
	This has been written in the		HUMAN MECHANISM,
	Hawaiian language so that the		
	students of the College at		AS THE BASIS OF
	Lahaina Luna may learn.		PHYSICAL EDUCATION.
	O'AHU:		BY JEROME V. C. SMITH,
	A PUBLICATION OF THE		M. D.
	MISSIONARY PRESS.		" – for I am fearfully and wonderfully made:" ¹
	1838.		
			BOSTON:
			ALLEN AND TICKNOR.
			1834.

1. Halelū 139:14 o ka Paipala.

Psalm 139:14 of the Bible.

2. ANATOMIA.

O ke ano o keia olelo, *Anatomia*, oia ka olelo hoakaka i ke kino, i kona ano, a me na mea a pau i hoonohoia maloko; o na *iwi*, o na *io*, o na *olona*, o na *ami*, o na *aa*, o na *puupuuu*, o na *naau*, a me na *wai*. O ia mau mea a pau, a me ka lakou hana maloko o ke kino e pono ai ke kanaka, oia ka keia palapala e hoakaka aku ai.

3. Aia ma na aina naauao, ua nui ka poe i ao ikaika ma ka *Anatomia*, mai ka wa kahiko mai. Ua nana pono lakou i na *iwi*, ua kaha i na kupapau he nui wale, a noonoo pono ka naau i ke ano o kela mea keia mea a ka maka i ike ai. Ua maopopo ka nui i keia manawa. Nolaia, mahalo ka poe naauao i ke akamai o ke Akua ka mea nana i hana, a i malama hoi i na mea kupaianaha o ko lakou kino. Aole loa e hiki ia lakou ke olelo me ka poe aia, “aohē Akua” no ka mea, ua ike pono lakou ia ia maloko o kana mau hana io. Eia hoi kekahi mea pono o ko lakou imi ana; ua loa ia lakou ke ano o na *mai*, a me na *eha*; a ua ike i ka lapaau ana: ua akamai loa na kahuna lapaau i neia wa, aole e like mamua. O Iesu, a me ka poe hana mana no ke kokuiaia mai e ke Akua, o lakou wale no ka poe i oi aku ko lakou akamai i ka lapaau ana.

2. ‘ANATOMIA.

‘O ke ‘ano o kēia ‘ōlelo, *Anatomia*, ‘o ia ka ‘ōlelo ho‘ākāka i ke kino, i kona ‘ano, a me nā mea a pau i ho‘onoho ‘ia ma loko; ‘o nā *iwi*, ‘o nā *‘i‘o*, ‘o nā *olonā*, ‘o nā *‘ami*, ‘o nā *a‘a*, ‘o nā *pu‘upu‘u*, ‘o nā *na‘au*, a me nā *wai*. ‘O ia mau mea a pau a me kā lākou hana ma loko o ke kino e pono ai ke kanaka, ‘o ia kā kēia palapala e ho‘ākāka aku ai.

3. Aia ma nā ‘āina na‘auao, ua nui ka po‘e i a‘o ikaika ma ka ‘*Anatomia* mai ka wā kahiko mai. Ua nānā pono lākou i nā *iwi*, ua kaha i nā kupapa‘u he nui wale, a no‘ono‘o pono ka na‘au i ke ‘ano o kēlā mea kēia mea a ka maka i ‘ike ai. Ua maopopo ka nui i kēia manawa. No laila, mahalo ka po‘e na‘auao i ke akamai o ke Akua ka mea nāna i hana, a i mālama ho‘i i nā mea kupaianaha o ko lākou kino. ‘A‘ole loa e hiki iā lākou ke ‘ōlelo me ka po‘e ‘aiā, “‘a‘ohe Akua” no ka mea, ua ‘ike pono lākou iā ia ma loko o kāna mau hana ‘i‘o. Eia ho‘i kekahi mea pono o ko lākou ‘imi ‘ana: ua loa‘a iā lākou ke ‘ano o nā *ma‘i* a me nā *‘eha*; a ua ‘ike i ka lapa‘au ‘ana: ua akamai loa nā kāhuna lapa‘au i nēia wā, ‘a‘ole e like ma mua. ‘O Iesū a me ka po‘e hana mana nō ke kōkua ‘ia mai e ke Akua, ‘o lākou wale nō ka po‘e i ‘oi aku ko lākou akamai i ka lapa‘au ‘ana.

2. ANATOMY.

The meaning of the word *Anatomy* is the explanation of the body, its nature and its internal structure: the *bones*, the *muscles*, the *sinews*, the *joints*, the *blood vessels*, the *organs*, the *digestive system* and the *fluids*. This document will explain all of these things and their necessary functions inside the body of a human being.

3. In enlightened lands, from remote antiquity there have been many people who have labored to comprehend and explain *Anatomy*. They have carefully studied the bones, dissected many corpses, and pondered on the nature of all they saw. The majority is understood at this time. Therefore, educated people respect the intelligence of God who created and sustains the amazing things that make up their bodies. It would be unthinkable indeed if they proclaimed, along with the irreligious, "there is no God," for they have seen Him in that which He has created. Here is another benefit to their pursuits: they have come to understand *diseases* and *sufferings*; and they have come to understand healing practices, for doctors of today are very learned, unlike in the past. Only Jesus himself, and those whose work is effective because of God's assistance, only these have a greater knowledge of healing.

2. ANATOMICAL CLASS BOOK.

ANATOMY is a useful science, which explains the nature, office and structure of every part of the human body.

3. From remote antiquity, men of learning and persevering industry have labored to comprehend and explain the complicated machinery of man, but at no period has the subject been better understood than at the present. By the study of this science, the condition of the species has been ameliorated; extreme sufferings have been avoided; and in the aggregate, human life has been prolonged.

4. On the minds of youth the influence exerted by a contemplation of their own physical condition, founded on a general knowledge of the situation and functions of the different organs, must certainly have a beneficial tendency. As they discover the exact regularity of parts; the beauty and harmony resulting from particular combinations of machinery, endowed with a high degree of vitality, on the action of which, health, life and happiness, are constantly depending, surely, it would be strange indeed if they did not fall, in humble adoration before that Supreme Intelligence which created, and which sustains them in existence.

...

6. ANATOMY IS DIVIDED
INTO NINE PARTS: <INCLUDING,>

Os-te-ol-o-gy, which treats of the bones.

...

4. NO NA IWI.

He nui ke kuleana o na iwi maloko o ke kino. Oia ka mea e *maloele* ai, a e *oolea ai*. Ina ua hanaia ke kanaka me ka iwi ole, e like me ka loli, pehea la e hiki ia ia ke ku ae iluna? Pehea la e hele? Pehea la e hana? He *pale* kekahi iwi; me na iwi poo e pale ai i ka lolo, a me na iwi aoao e pale ai i ke ake mama. He *une* ka nui o na iwi: e like me ka laau e mahiki ai i ka mea kaumaha, pela na iwi; a o na io ka mea e huki ai.

5. I ka wa opiopio ua palupalu na iwi, a he olu, aole e hiki wawe ka *hai*; a i oo ke kanaka ua oolea, a i ka wa elemakule e hai pinepine no ka maloo a me ka haihai wale. O ka *puna* ka mea e oolea ai na iwi; aia i kuniia ka iwi i ke ahi, alaila e ikea ai ka puna, he keokeo, aole nae e like loa me ka puna maoli, no ka huipua o kekahi mau mea maloko. O ka *pilali* kekahi mea maloko o na iwi. Oia kekahi kumu nui o na iwi. Eia ka mea e akaka ai ka pilali. E lawe i ka iwi uha moa, a e hookomo iloko o kekahi *acida* i huipua me ka wai, po akolu paha ka waiho ana iloko, alaila pau ka puna i ka aia e ka *acida*, pau ka oolea, he palupalu wale no, a he akaka, kokoke like me ke aniani kona akaka ana.

6. I ka hookauhua ana o ke keiki, he pilali wale no na iwi, a mahope iho lawe mai la ke koko i ka puna a waiho mawaena o ka pilali, a liuliu, ua

4. NO NĀ IWI.

He nui ke kuleana o nā iwi ma loko o ke kino. ‘O ia ka mea e *mālo‘elo‘e* ai a e ‘*ole‘a ai*. Inā ua hana ‘ia ke kanaka me ka iwi ‘ole e like me ka loli, pehea lā e hiki ai iā ia ke kū a‘e i luna? Pehea lā e hele ai? Pehea lā e hana ai? He *pale* kekahi iwi; me nā iwi po‘o e pale ai i ka lolo, a me nā iwi ‘ao‘ao e pale ai i ke akemāmā. He *une* ka nui o nā iwi: e like me ka lā‘au e mahiki ai i ka mea kaumaha, pēlā nā iwi; a ‘o nā ‘i‘o ka mea e huki ai.

5. I ka wā ‘ōpiopio, ua palupalu nā iwi, a he ‘olu, ‘a‘ole e hikiwawe ka *hai*; a i o‘o ke kanaka, ua ‘ole‘a, a i ka wā ‘elemakule, e ha‘i pinepine no ka malo‘o a me ka ha‘iha‘i wale. ‘O ka *puna* ka mea e ‘ole‘a ai nā iwi; aia a¹ kuni ‘ia ka iwi i ke ahi, a laila e ‘ikea ai ka puna he ke‘oke‘o, ‘a‘ole na‘e e like loa me ka puna maoli no ka hui pū ‘ia o kekahi mau mea ma loko. ‘O ka *pilali* kekahi mea ma loko o nā iwi. ‘O ia kekahi kumu nui o nā iwi. Eia ka mea e akāka ai ka pilali. E lawe i ka iwi ‘ūhā moa, a e ho‘okomo i loko o kekahi ‘*acida* i hui pū ‘ia me ka wai, pō ‘akolu paha ka waiho ‘ana i loko, a laila pau ka puna i ka ‘ai ‘ia e ka ‘*acida*, pau ka ‘ole‘a, he palupalu wale nō, a he akāka; kokoke e like me ke aniani kona akāka ‘ana.

6. I ka ho‘okauhua ‘ana o ke keiki, he pilali wale nō nā iwi, a ma hope iho, lawe maila ke koko i ka puna a waiho ma waena o ka pilali, a li‘uli‘u, ua

1. Ua ho‘ololi ‘ia ‘o “i” ‘o ia ‘o “a.”

“i” was changed to “a.”

4. OSTEOLGY.

The bones of the human body have an important function. They are what makes it *rigid* and *strong*. If man were made without bones like a sea slug; how would he be able to stand upright? How would he be able to walk? How would he be able to work? Some bones are *protective*, as the bones of the skull protect the brain, or the ribs protect the lungs. Most bones are like *levers*, working in the same way that a piece of wood can move something heavy up and down, with the muscles doing the pulling.

5. In childhood and youth, the bones are soft and pliant, and do not easily *break*; but when a person ages, they become hard, and when of great age, they break frequently because of their dryness and brittleness. *Calcium*¹ makes the bones hard, and it can be seen by burning a bone in a fire, which makes the calcium visible as a whitish powder, although it is not pure calcium due to its having been mixed with other substances. *Cartilage*² is also found inside bone. It is a major component. Here is a way to see the cartilage: take a chicken's thigh bone and put it in a mixture of *acid* and water, and after perhaps three days of being left to soak, the calcium will have been eaten away by the *acid*, leaving the bone without strength, and extremely soft and almost as clear as glass.

6. When a baby is in early gestation, the bones are quite gelatinous, and then calcium is brought by the blood and deposited within the cartilage,

7. OSTEOLGY.

All the bones, in manhood, are hard, and almost insensible, being composed of earth and lime, held together by means of *gelatin*, a kind of glue, secreted by appropriate vessels. The substance of the long bones, as, for example, those of the limbs, are compact, excepting at their extremities, where they become irregularly larger, and slightly spongy. They are classed in the following manner:

- {1. Cylindrical: bones, as in the arms.
- {2. Flat: bones, as in the shoulder blades.
- {3. Irregular: bones, as the ribs and those of the skull.

8. THEY ARE FURTHER
SUBDIVIDED INTO,

First: hollow bones, possessing marrow.
Second: flat bones, or those destitute of marrow.

9. Before arriving at about the age of twenty, the ends of the bones are considerably spongy, and imperfectly united to the main shaft, and, therefore, termed *epiphises*, from two Greek words, meaning *to grow upon*, but afterwards, they become firmly united.

10. The names of a majority of the bones are very arbitrary; some of them, however, have their appellation from a fancied resemblance to some object; others, are named from their shape, connexion, or supposed, or real use.

1. Hiki pū ke unuhi 'ia kēia 'ōlelo 'o "lime."

This word can also be translated as "lime."

2. Hiki pū ke unuhi 'ia kēia 'ōlelo 'o "gelatin" a "jelly" paha.

This word can also be translated as "gelatin" or "jelly."

hoomahuahuaia mai ia mea, lilo iho la ka mea palupalu i oolea, no ke komo ana o ka puna maloko. E nana aku oe i ka iwi loihi a ike i ka puka kahi e komo ai ke koko.

7. Ua hoomakaia keia hana, mawaena konu o ka iwi, a ina he iwi nui, aia kekahi hoomaka ana ma na aoao, hele ka puna mawaena o ka pilali e like ma ka nao o ka laau, a hookui kekahi me kekahi. Ina he iwi loihi, e waihoia ka puna mawaena a ma na poo kekahi, aole e huiia keia a oo ke kanaka, nolaila helelei na iwi loihi o ke kanaka hou ke maloo.

8. Ina i hai ka iwi a hoopili hou ia na wahi i hai, alaila, lawe mai ke koko i ka puna a waiho, a puni ia wahi: oia ka mea e kapili hou ai ka iwi a paa.

9. Ua palahalaha kekahi mau iwi, he poepoe loihi kekahi, a he ewaewa kekahi. Ua pau lakou i ka uhiia e kekahi mea lahilahi uuwa, oia ka *wahi* o ka iwi, o kona mea e nalo ai i ke kalakala, a e pahee ai i ka oni ana mawaena o na io.

10. Ua hakahaka na iwi loihi nui, i paa lakou aole e hai wawe, a i mama lakou, a i wahi hoi e waiho ai ka momona. Eia paha ke kuleana o ka momona maloko o na iwi. I ka wa e mai ai ke kanaka, aole e hiki ia ia ke ai i ka ai, aole e pono ka opu ke hoonohonoho i ka ai a lilo ia i mea e maona ai, aka, ua lilo ia i mea awaawa a me ka wela, a me ke nahu, maloko o kona opu: ia

ho‘omāhuahua ‘ia mai ia mea, lilo ihola ka mea palupalu i ‘o‘ole‘a, no ke komo ‘ana o ka puna ma loko. E nānā aku ‘oe i ka iwi lō‘ihi a ‘ike i ka puka kahi e komo ai ke koko.

7. Ua ho‘omaka ‘ia kēia hana ma waenakonu o ka iwi, a inā he iwi nui, aia kekahi ho‘omaka ‘ana ma nā ‘ao‘ao. Hele ka puna ma waena o ka pilali e like me² ka nao o ka lā‘au, a ho‘oku‘i kekahi me kekahi. Inā he iwi lō‘ihi, e waiho ‘ia ka puna ma waena a ma nā po‘o kekahi, ‘a‘ole e hui ‘ia kēia a o‘o ke kanaka, no laila helele‘i nā iwi lō‘ihi o ke kanaka hou ke malo‘o.

8. Inā i ha‘i ka iwi a ho‘opili hou ‘ia nā wahi i ha‘i, a laila, lawe mai ke koko i ka puna a waiho a puni ia wahi: ‘o ia ka mea e kāpili hou ai i ka iwi a pa‘a.

9. Ua pālahalaha kekahi mau iwi, he poepoe lō‘ihi kekahi, a he ‘ewa‘ewa kekahi. Ua pau lākou i ka uhi ‘ia e kekahi mea lahilahi ‘ū‘ua, ‘o ia ka *wahī* o ka iwi, ‘o kona mea e nalo ai i ke kalakala a e pahe‘e ai i ka ‘oni ‘ana ma waena o nā ‘i‘o.

10. Ua hakahaka nā iwi lō‘ihi nui i pa‘a lākou, ‘a‘ole e ha‘i wawe, a i māmā lākou, a i wahi ho‘i e waiho ai ka momona. Eia paha ke kuleana o ka momona ma loko o nā iwi. I ka wā e ma‘i ai ke kanaka, ‘a‘ole e hiki iā ia ke ‘ai i ka ‘ai, ‘a‘ole e pono ka ‘ōpū ke ho‘onohonoho i ka ‘ai a lilo ia i mea e mā‘ona ai, akā, ua lilo ia i mea ‘awa‘awa a me ka wela, a me ka³ nahu, ma loko o kona ‘ōpū:

2. Ua ho‘ololi ‘ia ‘o “ma” ‘o ia ‘o “me.”

“Ma” was changed to “me.”

3. Ua ho‘ololi ‘ia ‘o “ke” ‘o ia ‘o “ka.”

“Ke” was changed to “ka.”

and after some time, after increasing in quantity, the calcium causes the soft bones to become hard. Take a look at a long bone and you will see the hole where the blood goes in.

7. This depositing starts at the very center of the bone, and if the bone should be a large one, then it also starts at the extremities, with the calcium making its way into the cartilage just like the sap of a tree, uniting the whole together. If the bone should be a long one, the calcium is deposited in the center of the main shaft and at the ends as well, but these two parts do not firmly join until a person is matured, which is why young peoples' bones splinter so easily should they become dry.

8. If a bone should break and then be put back together at the break, the blood will deposit calcium all around the breakage. This is how bones are rejoined to be strong once again.

9. Some bones are flat, some are cylindrical, and some are irregular. They are all covered by a thin slick covering which is the *sheath* that covers the roughness and allows the bones to move smoothly between the muscles.

10. The long, large bones are hollow so that they are not quickly broken and so that they are light in weight, and so that there is a place for the marrow inside. Here is perhaps the role that the marrow plays within the bones. During the course of a sickness, a person cannot eat, for the stomach does not feel right trying to digest food to nourish the body, and so the food becomes

11. Every cavity, hole, or prominence, even to the burden of the science, has also a name, a knowledge of which is a key to the parts, either directly in contact, or lying in the immediate vicinity.

12. Protuberances are termed *processes*, and are generally the points of attachment for muscles or ligaments; the first being the moving power, and the latter, the bands which keep the ends of any two bones in juxtaposition.

13. *A natural skeleton* is one, the bones of which are held together by the original ligaments. Remarkable specimens of these kinds of preparations are common in museums, and cabinets of curiosities.

14. *An artificial skeleton*, is one, the individual bones of which are united together by wires.

manawa kīiia ae la ua momona la, a ma ke koko e lawe aku la, a hiki i na wahi a pau o ke kino, oia ka mea e ikaika ai ke kanaka i ka wa mai, aka i liuliu ka mai ana, pau ia momona, alaila kīiia ka momona o ke kino a puni, hiki wawe iho la ka wiwi i ua mai la. A pau ka mai, komo hou ka ai maloko o ka opu, lilo ia i mea e ikaika ai, alaila e hoi hou ua momona la i laweia’ku ai mamua, a piha hou na iwi i ka momona. No ia mau mea, e pono ke waiho i ka ai i ka manawa mai: he hoopailua ka opu i ka ai, no ka mea ua ike ia he mea kaumaha ka ai. Mai makau ka mai i ka pololi; ina e hoole ka opu i ka ai, aole e make koke ke kanaka i ka pololi. Nani ka lokomaikai o ke Akua i kona hoomakaukau ana i ka momona maloko o na iwi, i mea e ola ai ke kino i ka manawa mai.

i ia manawa, ki’i ‘ia a’ela ua momona lā, a na⁴ ke koko e lawe akula a hiki i nā wahi a pau o ke kino, ‘o ia ka mea e ikaika ai ke kanaka i ka wā ma’i. Akā, i li’uli’u ka ma’i ‘ana, pau ia momona, a laila, ki’i ‘ia ka momona o ke kino a puni, hikiwawe ihola ka wīwī i ua ma’i lā. A pau ka ma’i, komo hou ka ‘ai ma loko o ka ‘ōpū, lilo ia i mea e ikaika ai, a laila, e ho’i hou ua momona lā i lawe ‘ia aku ai ma mua, a piha hou nā iwi i ka momona. No ia mau mea, e pono ke waiho i ka ‘ai i ka manawa ma’i: he ho’opailua ka ‘ōpū i ka ‘ai, no ka mea ua ‘ike ‘ia he mea kaumaha ka ‘ai. Mai maka’u ka ma’i i ka pololi; inā e hō’ole ka ‘ōpū i ka ‘ai, ‘a’ole e make koke ke kanaka i ka pololi. Nani ka lokomaika’i o ke Akua i kona ho’omākaukau ‘ana i ka momona ma loko o nā iwi i mea e ola ai ke kino i ka manawa ma’i.

11. Alua haneri me ke kanaha iwi iloko o ke kino o kakou, a i ke ao ana ua puunauēia i ekolu papa. 1 O na iwi o ke poo. 2 O na iwi o ke kino ponoī. 3 O na iwi o na lala.

11. ‘Alua haneli me ke kanahā iwi i loko o ke kino o kākou,⁵ a i ke a’o ‘ana, ua pu’unaue ‘ia i ‘ekolu papa. 1. ‘O nā iwi o ke po’o. 2. ‘O nā iwi o ke kino pono’ī. 3. ‘O nā iwi o nā lālā.

4. Ua ho’ololi ‘ia ‘o “ma” ‘o ia ‘o “na.”

“Ma” was changed to “na.”

5. ‘Okō’a ka huina nui o nā iwi ma kā Lahaina Luna a ‘okō’a ma kā Smith. ‘Okō’a ho’i ia mau huina nui ‘elua i ko kēia lā.

The number of bones differ between the Lahaina Luna version and the Smith text. Also, both differ from today’s accepted number.

soured and the person becomes feverish with a stomach-ache. In such circumstances, the marrow is carried by the blood to all parts of the body, which is what makes the person strong again despite having been ill. But should the sickness continue for some time, all of that marrow is exhausted, and so the fat from all over the body is used and the person quickly becomes emaciated due to the illness. When the illness is over, and the stomach starts to take nutriment, the body strengthens and the marrow and fat, which were borrowed, are all returned, and the bones are once again filled with marrow. It is for this reason that the right thing to do when sick is not to eat: the stomach is repulsed by food for it knows that food is burdensome. A sick person should not be afraid of hunger; if the stomach refuses food, a person will not quickly die of starvation. God has been extremely benevolent in his supplying of marrow within the bones, that the body may continue to survive in times of sickness.

11. There are two hundred and forty bones in our body, and for their study, they have been divided into three groups. 1. The bones of the head. 2. The bones of the trunk. 3. The bones of the extremities.

15. In the human skeleton, there are two hundred and fifty-two separate bones. Those who labor hard, have sometimes an extra number, which form near the joints of the thumb, fore finger and toes. They are called *sesamoids*, from their resemblance to the seed of the Sesamum plant. They are useful in increasing the power of the muscles wherever they grow.

12. O NA IWI O KE POO.

He kanaonokumamakolu iwi o ke poo;
 8 iwi o ke poo ponoī a puni ka lolo,
 14 iwi o ka maka,
 32 niho, (ko ke kanaka makua,)
 8 iwi pepeiao,
1 iwi alelo,
 63

13. Aole e like loa na poo o kanaka ke nana aku. Ua hana ke Akua, he ano okoa iki ko kekahi, a he okoa iki ko kekahi. Pela no na maka: aole loa e loaia na kanaka elua, ua like loa ko laua helehelena, ke imi nui ma na aina a pau. O kekahi mau mahoe, ua kokoke like ka hiona, aka, ina e nana pono aku alaila ikea mai ko laua mea e okoa ai.

14. He mea nui i na aina naaupo ke hoololi aku i ke ano maoli o na poo o ka lakou mau kamalii i ano hou. Opa kekahi ma na aoao o ke poo e lapa ai ma na aoao: ma ka lae kekahi poe, a o ko Hawaii nei, mana la lakou o ke poo lapa lapa ma ka lae a ma ka *hope*, oia ke poo maikai. Ma

12. ‘O NĀ IWI O KE PO‘O.

He kanaonokumamākolū iwi o ke po‘o;⁶
 8 iwi o ke po‘o ponoī a puni ka lolo,
 14 iwi o ka maka,
 32 niho (ko ke kanaka makua),
 8 iwi pepeiao,
1 iwi alelo,
 63

13. ‘A‘ole e like loa nā po‘o o kānaka ke nānā aku. Ua hana ke Akua he ‘ano ‘oko‘a iki ko kekahi, a he ‘oko‘a iki ko kekahi. Pēlā nō nā maka: ‘a‘ole loa e loa‘a i’ nā kānaka ‘elua, ua like loa ko lāua helehelena, ke ‘imi nui ma nā ‘āina a pau. ‘O kekahi mau māhoe, ua kokoke like ka hi‘ona, akā, inā e nānā pono aku, a laila, ‘ikea mai ko lāua mea e ‘oko‘a ai.

14. He mea nui i nā ‘āina na‘aupō ke ho‘ololi aku i ke ‘ano maoli o nā po‘o o kā lākou mau kamali‘i i ‘ano hou. ‘Ōpā kekahi ma nā ‘ao‘ao o ke po‘o e lapa ai ma nā ‘ao‘ao: ma ka lae kekahi po‘e, a ‘o ko Hawai‘i nei, mana ‘o lā lākou ‘o ke po‘o lapa lapa ma ka lae a ma ka *hope*, ‘o ia ke po‘o maika‘i. Ma

6. ‘Oko‘a ka nui o nā iwi ma ka puke o Lahaina Luna, ‘oko‘a ma ka puke a Smith no ke komo ‘ole o nā iwi ‘ewalu o ka pepeiao i loko o ka huina nui.

The number of bones differ between the Lahaina Luna version and the Smith text because the Smith text excludes from its total the eight bones of the ear.

7. Ua ho‘ololi ‘ia ‘o “loaia” ‘o ia ‘o “loa‘a i.”
 “Loaia” was changed to “loa‘a i.”

16. THE SKELETON IS
DIVIDED INTO

First: the head
Second: the trunk.
Third: the extremities.

12. THE BONES OF THE HEAD.

There are sixty-three bones in the head;
8 bones of the skull surrounding the brain
14 bones in the face
32 teeth (in an adult)
8 bones of the ear
1 bone of the tongue
63

17. FIRST DIVISION.

There are fifty-five bones entering into the composition of the head, by including thirty-two teeth.

13. People's heads don't all look the same. God made all slightly different. The same goes for the face: one cannot find two people with exactly the same features, even if an extensive search is made in all lands. Some twins have very similar features, but upon closer inspection, one can find something to tell them apart.

14. It is an important thing in unenlightened nations to change the natural form of the heads of their children and reshape them. Some apply pressure on the sides to make them slope: some do it to the forehead, and as for the Hawaiians, they think that heads with a high sloping fore-

na aina naauao, e waiho wale lakou i na poo o ka lakou mau kamalii, me ka maikai a ke Akua i hana’i ia lakou.

15. NA IWI O KE POO PONOI.

1 Iwi Lae, ma ka *lae*.

2 Iwi Hua, ma na *hua* o ke poo,

1 Iwi Hope, aia o *hope* o ke poo.

2 Iwi Maha, ma na *maha*,

1 Iwi Kānana, mawaena o ka lolo a me ke kumu o ka ihu.

1 Iwi Ōpeapea, aia maloko, malalo o ka lolo.

16. IWI LAE.

Hookahi keia iwi i ka wa e oo ai ke kanaka, aka i ka hānau ana o ke keiki ua mokuia mawaena, mai luna a hala i lalo i elua iwi. He iwi lahilahi; me he olepe la kona helehelena. Aia kekahi hakahaka ma ke kihi e pili ana me na iwi ihu, mawaena o na aoao elua o ka iwi lae, o ka aoao maloko a me ka aoao mawaho. He mea keia e kani ai ka leo. No ka hakahaka ke kani ana me he pahu la. A i loa ka mai i kapaia he ihu paa, paa iho la ka puka e komo ai ka makani iloko o ua hakahaka nei, nolaila ua kanunu ka leo. Ma

nā ‘āina na‘auao, e waiho wale lākou i nā po‘o o kā lākou mau kamali‘i me ka maika‘i a ke Akua i hana ai iā lākou.

15. NĀ IWI O KE PO‘O PONO‘Ī.

1 Iwi Lae, ma ka *lae*.

2 Iwi Hua, ma nā *hua* o ke po‘o,

1 Iwi Hope, aia ma *hope* o ke po‘o.

2 Iwi Maha, ma nā *maha*,

1 Iwi Kānana, ma waena o ka lolo a me ke kumu o ka ihu.

1 Iwi Ōpe‘ape‘a, aia ma loko, ma lalo o ka lolo.

16. IWI LAE.

Ho‘okahi kēia iwi i ka wā e o‘o ai ke kanaka, akā, i ka hānau ‘ana o ke keiki, ua moku ia ma waena, mai luna a hala i lalo i ‘elua iwi. He iwi lahilahi; me he ‘olepe lā kona helehelena. Aia kekahi hakahaka ma ke kihi e pili ana me nā iwi ihu, ma waena o nā ‘ao‘ao ‘elua o ka iwi lae, ‘o ka ‘ao‘ao ma loko a me ka ‘ao‘ao ma waho. He mea kēia e kani ai ka leo. No ka hakahaka ke kani ‘ana me he pahu lā. A i loa‘a ka ma‘i i kapa ‘ia he ihu pa‘a, pa‘a iholā ka puka e komo ai ka makani i loko o ua hakahaka nei, no laila, ua kanunu⁸ ka

8. Ua like ka mana‘o o kanunu me kanulu.

Kanunu is a variant of kanulu.

head and *back* are the best shaped ones. In enlightened lands, people leave the heads of their children alone, just as the Lord made them.

15. THE BONES OF THE HEAD.

- 1 Forehead Bone <(os frontis)>, constituting the *forehead*.
- 2 Rounded Bones <(ossa parietalia)>, making the *sides* of the head,
- 1 Rear Bone <(os occipitis)>, at the *back* of the head.
- 2 Temple Bones <(ossa temporum)>, making the *temples*,
- 1 Sieve Bone <(os ethmoides)>, lying between the brain and the root of the nose.
- 1 Wedge-shaped Bone <(os sphenoides)>, being within the skull and below the brain.³

16. FOREHEAD BONE.

This bone <(os frontis)> is one piece in the adult, but when a child is born, it is split down the middle, from the top to the bottom forming two bones. The bone is very thin; it is like a clam in appearance. There is a cavity at the intersection with the nasal bones, between the two sides of the forehead bone, which lies on both the inside and outside. Upon this cavity depends the sound of the voice. The cavity is responsible for the sounds as like a drum. Should one be suffering from that illness called nasal congestion, the

18. EIGHT BONES IN THE SKULL.

- One *os frontis*, above the eyes, constituting the *forehead*.
- Two *ossa parietalia*, making the *sides*, above the ears.
- One *os occipitis*, at the lower and back part of the head.²
- Two *ossa temporum*, or temple bones.
- One *os ethmoides*, or sieve-like bone, lying between the brain and root of the nose.
- One *os sphenoides*, being the bottom of the skull, nearly concealed.

3. Ma ka ‘ōlelo Lākina, ‘o “os” he iwi ia. ‘O “ossa” ka helu nui.

In Latin, “os” means “bone.” In the plural it is “ossa.”

2. Ua ho‘one‘e ‘ia kēia inoa iwi i ‘ane‘i i mea e kūlike ai me ke kikokikona ma ‘Anatomia. Ua helu ‘ia ia iwi ‘o ia ka hope o ka papa inoa o nā iwi po‘o ma kā Smith puke.

This bone’s name was moved out of sequence in the text in order to parallel the Lahaina Luna version – it was originally at the bottom of this list of skull bones in the Smith book.

keia iwi kekahi hapa o ka makalua, a ma ka aoao, he lapa no ka pili ana o ka *io maha* ka mea e huki ai ka iwi a iluna. Ma keia iwi hoi na lihi, kahi e pili ai na *kuemaka*.

leo. Ma kēia iwi kekahi hapa o ka maka lua, a ma ka ‘ao‘ao, he lapa no ka pili ‘ana o ka *‘io maha* ka mea e huki ai ka iwi ā i luna. Ma kēia iwi ho‘i nā lihi, kahi e pili ai nā *ku‘emaka*.⁹

9. E komo nā māhele hou o *Anatomia* i loko o nā puke pai e hiki mai ana.

The presentation of *Anatomia* will continue in future issues of the journal.

passage where the air enters these cavities is closed up, therefore making the voice muted and deep in tone. On this bone is part of the eye socket and on the side is a ridge attached to the temple muscle which pulls the jaw bone up. Also on this bone is the edge where the eyebrow is attached.