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nates the O_3 , the gyrus lingualis and fusiformis to the confluence of the calcarine fissure with the parieto-occipital fissure (s. Psych. Bladen Pl. IV, fig. 6). Also a part of the gyrus occipito-temporalis, lying more proximally, is injured.

Through this lesion the ventral division of the geniculo-cortical radiation as well as that of the area of WERNICKE is degenerated, but in less degree its most ventral layer (cf. Ps. Bladen, Pl. V, fig. 12)

The geniculate body belonging to this is drawn in fig. 18. It is smaller than normal, but not as far reduced as in both the former observations. The proper capsule is not changed dorso-medially and the same can be said of its cells, dorsal as well as the ventral ones, belonging to the caput of the ganglion.

The cauda is for the greater part atrophied but not the most laterally situated division of it. There, ventral and dorsal cells are to be seen within an almost normal capsule. Between caput and cauda, not or only little changed, one finds in the middle a part, where all is destroyed; the dorsal and ventral cells, the striae medullares, the proper fibres and the proper capsule.

In this case an example is shown of an *incomplete* atrophy of the cauda of the lateral geniculate body, incomplete because the focus did destroy the ventral occipital convolutions, but had not touched the gyrus occipito-temporalis far enough proximally. Therefore the most ventral layers of the geniculo-cortical radiation and the most lateral parts of the cauda remained free from degenerative atrophy.

Recapitulating I come to the following conclusions:

1. Vision in the upper quadrants of the field of vision is possible, notwithstanding the total loss of all the cells and fibres in the medial (caput) division of the crossed lateral geniculate body, as long as the cells and fibres of the cauda (origin of the ventral geniculo-cortical radiation) are intact.

2. It is not sufficient that the ventral occipital convolutions are destroyed to make all the cells disappear out of the lateral (cauda) division of the geniculate body. This only occurs when more proximally situated parts of the gyrus occipito-temporalis are destroyed.

3. The cortical areae belonging to the lateral geniculate body are not only limited to the cortex of the occipital lobe.

Chemistry. — “*On the occurrence of metals in the liver*”. By Prof. L. VAN ITALLIE and Dr. J. J. VAN ECK. (Communicated by Prof. EINTHOVEN).

(Communicated in the meeting of November 30, 1912).

In the analysis of organs as to the presence of metallic poisons, we found in the liquid obtained after destruction of 170 grams of liver, kidney and heart, in addition to traces of arsenic and copper, as much zinc as corresponds with 80 mgs. of zinc oxide per kilogram of organs. As there was no reason to suppose that a poisoning

with a zinc salt had been attempted the literature was consulted to see whether anything was known as to the occurrence of zinc in the human body. This investigation gave a positive result: Communications have been made by LECHARTIER and BELLAMY¹, and by RAOULT and BRETON²) from which it appears that the human liver may contain 10—76 mgs of zinc per kilogram. The quantity might be dependent on the age, the state of health and the nature of the food of the persons from which the liver is derived.

As the method of investigation did not appear to us correct in every respect and as the number of livers tested was comparatively small and as, moreover, the results could not be taken as applying to Holland without further evidence, we have investigated a number of human livers of Dutch origin. We have also extended the investigation to the occurrence of arsenic and copper.

As regards the presence of arsenic, the results of BLOEMENDAL³) are opposed to those of the French investigators. Whereas the latter assume the presence of normally-occurring arsenic, according to BLOEMENDAL the liver does not normally contain the same.

As to the distribution of copper in the animal and vegetable organism, investigations have been carried out by LEHMANN⁴). There was reason to suppose that the "charring process" employed by him had caused the results to be too low; moreover, figures of Dutch origin, are also wanting here.

For the destruction of the organic matter we, with a few modifications, made use of the process devised by KERBOSCH in the pharmaceutical laboratory at Leiden. This method has the great advantage that the organic substance is completely destroyed, the only reagents used being sulphuric and nitric acids which can be obtained absolutely free from arsenic.

For this purpose, a current of hydrochloric acid is passed for some hours through sulphuric acid heated at 250—270°, whereas nitric acid can be obtained free from arsenic by distillation. In a check-experiment where 25 cc. of sulphuric acid and 250 cc. of nitric acid had been used and of which 5—6 cc. of liquid were left after distillation; no arsenical mirror could be obtained in a modified Marsh-apparatus. From previous investigations, it had already appeared⁵) that the limit of sensitiveness may be taken as 0.0001 mg. of arsenic.

¹) Compt.-rend. de l'Ac. des Sc. 84, 1877, p. 687—690.

²) Idem. 85, 1877, p. 40—42.

³) Arsenicum in het dietlijk organisme. Dissertatie Leiden 1908.

⁴) Arch. f. Hygiene 24, 1895.

⁵) BLOEMENDAL l. c.

As to the exact *modus operandi* of the quantitative determinations, we refer to the more detailed communication to be published elsewhere.

The results of our investigations are collected in the annexed table, augmented with the *data* furnished to us as to the origin of the livers.

HUMAN LIVERS.

Age	Sex	Occupation	Residence	Course of death	Number of mgs. per kilo of liver, calculated as :		
					As	Cu	Zn
Still-born					—	26.1	73.9
Some hours					—	30.0	52.2
5 weeks	m.		Leiden		0	8.0	55.7
3 months	m.		"	Acute enteritis	0	18.9	55.0
3½ years	m.		Rijnsburg	Diphtheria	trace	10.6	67.8
5 "	m.		Leiden	"	0.06	2.9	—
21 "	f.	Servant	"	Morbus Basedowi	0	5.7	36.1
24 "	f.		Woudrichem	Miliary tuberculosis	0	11.2	79.6
28 "	m.	Greengrocer	Den Haag		0	4.8	—
28 "	f.		Noordwijk	Pneumonia	0	14.8	56.2
32 "	m.	Navvy	Friesland	Septicaemia	0.03	6.0	50.6
35 "	f.		Hazerswoude	Carcinoma	0	5.0	17.7
36 "	f.	Housewife	Leiden	"	trace	17.7	60.5
37 "	m.	Roadman	Den Haag		2.63 ¹⁾	3.8	54.3
39 "	m.	Gardener	Voorhout	Kidney tuberculosis	trace	3.2	79.4
43 "	m.	Dealer	Nieuwkoop	Brain bleeding	trace	6.15	44.5
40-50,,	m.	Goldsmith	Leiden	Tumour in stomach	trace	10.0	62.3
50 "	f.		Vlaardingen	Tumour in kidney	0	13.8	64.6
70 "	f.		Leiden	Apoplexy	0	7.4	55.9
70 "	m.	Casual labourer	"	Hypertroph. prostat.	0.1	10.6	26.7
74 "	f.		"	Apoplexy	0.015	9.0	53.0
76 "	f.	None	"	Rib fracture	0.5	9.1	86.8
83 "	f.		"	Heart disease	trace	3.8	35.0
86 "	m.		"	Arteriosclerosis	0	8.0	41.1

1) Before death, the deceased had used *Pilulae Blaudii c. Acido arsenicos.* as a medicine.

In the investigation of the liver of a new-born calf were found, per kilo, 31 mgs. of copper and 81.1 mgs. of zinc.

From the results obtained the following conclusions may be drawn :

1. Arsenic is not a normal constituent of the human liver.
2. Copper and zinc appear to occur regularly in the human liver.
3. They are already deposited in the liver during the foetal stage and, as regards copper, even in a larger quantity than in the following period.
4. Otherwise, there seems to exist no relation between the copper and zinc content of the liver and the age, sex, occupation and place of residence.

5. The figures given by LEHMANN for the copper content are comparatively low. His maximum figure of 5 mg. per kilogram of liver is, as a rule, exceeded in Holland.

*Pharmaceutical Laboratory
University, Leiden.*

Chemistry. — “*Equilibria in ternary systems. II*”. By Prof. SCHRINEMAKERS.

(Communicated in the meeting of November 30, 1912).

In the previous communication we have observed the changes when at a constant temperature there is a change of pressure, and from this deduced the saturation lines of a solid substance F under their own vapour pressure. We will now briefly consider the case that, at a constant pressure, there is a change in temperature. At a constant temperature a reduction of pressure causes an expansion of the gas region and a contraction of the liquidum region; under a constant pressure the same happens on elevating the temperature.

A system that exhibits at a constant temperature a maximum vapour pressure (minimum), has at a constant pressure a minimum boiling point (maximum).

At a constant temperature, the influence of the pressure on the situation and form of the saturation line of F is generally small unless at temperatures close to the melting point of F , at a constant pressure the influence of the temperature is usually much greater and the movement of the line, therefore, much more rapid. Yet, as a rule, the liquidum line will move more rapidly than the saturation line unless indeed the latter is on the point of disappearing.

At a constant temperature, the saturation line of F may disappear on increasing or reducing the pressure; this depends on whether, on melting, an increase or a decrease of the volume takes place. Under