ance of the germinal epithelium, however, has been noted in case of ligation of the vas deferens without further disturbance of the testis. The testis graft does persist after transplantation in a female, with an intact ovary, and it is as normal as autoplastic testicular grafts, either with or without previous castration.

These observations show definitely that a sex gland can be successfully transplanted to an animal of the opposite sex which retains one normal gonad. Positive cases are of much more significance than any number of negative cases and leave no question as to whether the two glands can exist in a functional condition within the same organism at the same time. A male rat with one testis will function as a normal male during the time it is carrying two ovarian grafts as an integral part of its somatic structure; both of these grafts remain essentially normal, showing all grades of maturity of follicles, even after existence, in the subcutaneous tissues of the male, of eight and one half months.

A discussion of these observations will be taken up more fully when the completed work appears.

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STATIC REJUVENATION

For several years the writer has been making a systematic detailed study of the driftless area of southern Indiana, and has now in preparation a paper on the physiographic development of the Knobstone cuesta region lying between the Muscatatook and Ohio rivers. This particular region offers one or two problems of more than local interest, and the interpretation of one of these will be briefly stated here.

It appears that some time about the middle of the Tertiary the entire region was reduced to a peneplain (Highland Rim, or Lexington peneplain). The region was then rejuvenated by uplift. Dissection of the uplifted peneplain followed. Dissection was fairly complete near the major streams, and, in the regions of soft rocks, local areas were reduced to base-level. These locally reduced plains indicate that the uplift amounted to something like 175 feet. The region was again uplifted and dissection was renewed or continued. The Tertiary uplifted peneplain is now represented by remnants which are as much as 300 to 500 feet above the present local base-level. The New Albany shale and the lower part of the Knobstone areas were reduced to a lowland in contrast to the region west of the Knobstone escarpment. The lowland plain, stretching north from Louisville consists of a flat to undulating plain varying from 430 feet in the valleys near the Ohio River to something like 600 feet in elevation on the low divide between Silver Creek and the tributaries of the Muscatatook River. Since there are a large number of hills and flat interstream tracts at an elevation of about 500 feet at the south and coming up to about 600 feet near the above mentioned divide to the north, it has been stated that a local peneplain was formed at that level.[1] The writer concurs in the belief of a base-leveled plain of local area, and that its further development was terminated by rejuvenation. The rejuvenation, however, was not necessarily brought about by uplift. The dissection of the plain was very likely brought about by drainage changes made near the beginning of the Pleistocene. The present Ohio River is a large stream made up of a number of former drainage basins which were more or less destroyed or deranged by combination into a large major stream approximately skirting the outer limits of glacial advance. A very much smaller stream than the present occupied this territory near Louisville. It was able to reduce the area of soft rocks nearly to base-level, but it had a much steeper gradient than the much larger present Ohio. When the present Ohio invaded the basin of the much smaller pre-glacial stream the local peneplain was statically rejuvenated, due to the sinking of the larger stream into the plain on account of its ability to possess a much lower gradient in its grade condition. Such

[1] Chas. Butts, "Geology of Jefferson Co., Ky.," Ky. Geological Survey, 1915, pp. 201–203.

a rejuvenation is here called *static rejuvenation.*

It may be further stated that the region of the Muscatatook River to the north still possesses just such a local base-leveled plain that existed in the New Albany locality. It is inferred that the stream which the Ohio dispossessed was somewhat near the size of the Muscatatook-White River. This stream possesses a gradient in its graded condition slightly less than one foot to the mile, while the Ohio has a gradient below New Albany slightly less than three inches to the mile. It would appear than such a change in gradient would allow a trenching of something like 90 feet, which is approximately the amount of the dissection of the local peneplain in the vicinity of New Albany, using the flood plain as the present local base-level. This figure is derived by taking the difference between the gradients of the Ohio and its assumed predecessor from New Albany to Cannelton, a distance of approximately 120 miles. In the lattitude of Cannelton valley filling begins to be rather conspicuous, and this nullifies any difference in the gradients of the former and the present streams, assuming that the valley filling of southwestern Indiana and associated regions took place during the pleistocene. A still further check both on the postulated static rejuvenation and its amount is found in the peculiar gradients of the streams emptying into the Ohio between New Albany and Cannelton. The gradients are approximately as high in their lower reaches as in their middle and upper courses. This is conspiciously true of Blue River and Indian Creek. Other complications however, enter into the full explanation of these peculiar gradients, making this a problem in itself.

The above statement of the conditions and such an explanation are ventured here for the first time. It is thought that the principle of static rejuvenation may have a wider application than the case here given. The writer would further suggest that its application be made in certain piracy cases.

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THE AMERICAN CHEMICAL SOCIETY.

II

COLLOID SYMPOSIUM

W. D. Harkins and Harry N. Holmes, *Joint Chairman*

Some practical applications of colloid chemistry: JEROME ALEXANDER.

Gelatinous precipitates: WILDER D. BANCROFT.

The colloid chemistry of soaps: MARTIN H. FISCHER.

Vegetable tanning as a colloid chemical process: JOHN ARTHUR WILSON. Vegetable tanning is the reaction taking place between the collagen of hide and the water-soluble matter extracted from certain vegetable materials and known as tannin. Collagen is not built up of individual molecules, but of chains of atoms forming a three-dimension network with interstices sufficiently large to permit the passage of all ordinary molecules and ions. Under the conditions obtaining in practise, collagen has a positive electrical charge and the solution absorbed in the interstices has a difference of potential against the unabsorbed portion of the tan liquor. The tannin particles are negatively charged and the thin film of solution immediately in contact with the surface of the particles has a potential difference against the bulk of the tan liquor, but of sign opposite to that in the case of collagen. This surface film of solution and the solution absorbed by the collagen tend, therefore, to merge, and when this occurs, the positively charged collagen and negatively charged tannin neutralize each other by combination, forming leather. The fact of practical importance is that the potential differences referred to, and therefore the rate of tanning, can be altered without necessarily altering the absolute values of the electrical charges.

Ceramic processes associated with colloid phenomena: A. V. BLEININGER. Clays are mixtures of finely divided aluminum silicate, of the type $Al_2O_3 2SiO_2 2H_2O$ with granular matter, such as quartz, feldspar, mica, etc., and other colloids like ferric oxide and hydroxide. The particles are of the magnitude of 5μ, or smaller. Clay suspended in water is affected in a pronounced manner by alkalies, salts and acids. The former tend to deflocculate it, the latter two cause coagulation. Both phenomena occur in phases. Absorption of the basic ion of salts is characteristic, the acid ion remaining in the dispersing medium. Deflocculation is employed in the purification of clays and in the casting process. Measurements of the fluidity