differs strikingly from any marten skin in the museum collection, or elsewhere, so far as I am aware. The long bristly hairs are everywhere lacking on the skin, which bears about the same relation to a normal marten that a plucked beaver or seal skin does to an unplucked one. Coues[1] describes the pelage of the marten as consisting of three kinds of hairs:

> The first is very short, soft and wool-like * * * the second soft and kinky, like the first but very much longer, coming to the general surface of the pelt. The third is the fewer, still longer, glossy hairs, bristly to the roots.

The specimen in question entirely lacks the long glossy hairs, and possesses a very few only, of Coues's second variety of hairs, with soft kinky base and short bristly tip. The entire pelage is practically composed of the soft short underfur. The general color of the skin is not abnormal; the head, chest, legs and feet are perhaps a little darker brown than the usual run of skins. The general size and proportion of the skin differ in no way from that of a normal marten.

Marcus W. Lyon, Jr.

AN OBJECT-FINDER FOR THE MICRO-PROJECTION APPARATUS.

No doubt every one who has undertaken to project the image of a microscopic preparation directly upon a screen for class or lecture demonstration purposes has realized the difficulties in the way of rapid and accurate location of the exact part of the object desired. Indeed, this method of illustration is at present seldom made use of, owing chiefly to the great loss of time involved, and to the distracting effects upon the attention of the class or audience.

Some time ago the writer devised an attachment for the micro-projection apparatus which so effectually overcame the difficulties mentioned above as to render this method of demonstration quite as expeditious and precise as that with ordinary photo-micrographic or other lantern slides. With this condition assured, the advantages of the method are obvious. Inquiries regarding this apparatus have led to the belief that the publication of a description of it may be worth while. The following description and the accompanying figures represent the latest improved form of the attachment.

As indicated in the figures, this attachment consists of a rotary object stage and a secondary, short-range projector, mounted on the same base-board with the usual projection apparatus. The light is taken from the electric arc, or other illuminant, *L*, of the main projector, through the opening at the side of the hood. In place of the blue or purple glass commonly found in this opening, there is put a simple collimating lens. The parallel emergent rays are reflected by the mirror, *A*, into the line of the optical axis of the finder, which is parallel to that of the projector proper. By means of the condenser, *B*, these rays are brought to a focus at the position of the object on the revolving stage *C*. A good hand lens at *D* projects an image of the object upon the small screen, *E*, which need not be more than about thirty inches from the object. The plan of the base-board, Fig. 2, will make clear the arrangement of the parts.

Fig. 3 shows the plan of the rotary stage-plate, with four openings and spring clips for holding the slides in position. Fig. 4 represents a face-view of the screen, *E*, which has a dead-white surface, with the two centering lines in black. All the parts are mounted on telescoping pillars, and are made adjustable in position on the base-board.

The rotary stage-plate requires special care in its construction and mounting, as it must be both accurate and rigid. Fig. 5 shows the details of the mounting. On top of the heavy pillar is the sleeve, made from thick-walled brass tubing. On the ends of the sleeve are the two collars, *b* and *c*. Working in the sleeve is the shaft, which is held in position by the collar *a* and the nut *n*. The plunger, *p*, actuated by the spring, *s*, passes through the collars, *b* and *c*, and engages the collar *a*. Four holes are drilled in the collar *a* for the plunger, and these holes must be exactly

[1] 'Fur-bearing Animals,' U. S. Geol. Survey, Miscell. Pub., No. VIII., 1877, p. 82.

ninety degrees apart. The stage-plate, *f*, is screwed firmly to the shaft and collar *a*, with the stage-openings precisely in the same radii with the four holes in the collar *a*.

ject which is now centered in the finder will be centered when rotated into the axis of the projector. Hence, while the first object is being projected on the large screen, the op-

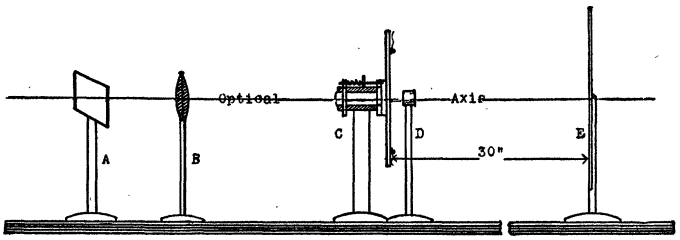

FIG. 1. Side Elevation

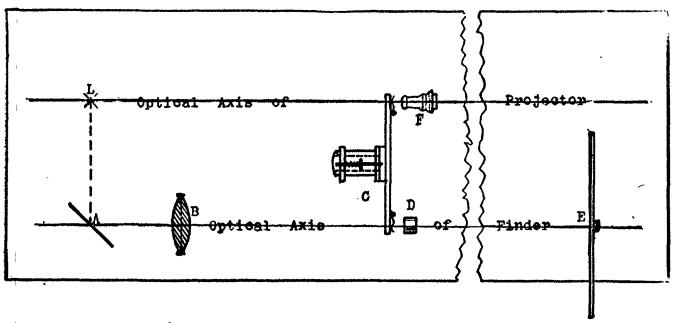

FIG. 2. Plan of base level.

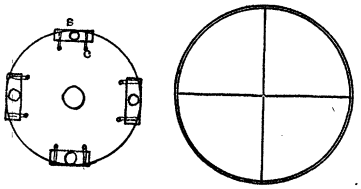

FIG. 3.

FIG. 4.

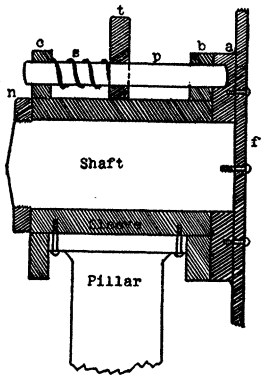

FIG. 5.

To operate the finder, it is first made par central, as follows: A slide bearing fine cross-lines, such as a stage micrometer, is accurately centered under the objective, *F*, of the projector. Then the stage is rotated 180°, and, without moving the slide, the image is brought to center on the screen *E* by adjusting the lens *D* and the screen *E*. Evidently, any object which is now centered in the finder will be centered when rotated into the axis of the projector. Hence, while the first object is being projected on the large screen, the operator may be finding the part of the third object which he wishes to show, the second having been located already. When the second is to be thrown upon the screen, the plunger is disengaged by means of the thumb-block *t*, and the stage is rotated 90°, when the plunger automatically locks the mechanism in the proper position. Slides of uniform thick-

ness are used in mounting objects for projection purposes, so that the projector may be brought to the proper focus with the least possible delay.

To secure the best results it is evident that the rotary stage must be accurately and rigidly built, in order to secure precise double centering of the object, and freedom from vibration.

Amon B. Plowman.

Pittsburg, Kans.

HELIUM IN NATURAL GAS.

Some three years ago a strong flow of natural gas was struck at Dexter, Kans. Upon the first attempt to utilize this, it was found that it would burn with difficulty and that only in previously heated enclosed space. Experience has so far improved the method of handling the gas that at the present time it is being successfully used for burning brick. The whole difficulty is due to the fact that it contains only a little over fifteen per cent. of combustible constituents. The first publication upon this gas was a paper by Haworth and McFarland, Science, Vol. 21, p. 191, in which they reported that it contained in addition to a large amount of nitrogen some inert residue.

We have taken up the further investigation of this gas and at the New Orleans meeting of the association Dr. E. H. S. Bailey reported for us that it contained 1.84 per cent. of helium. The occurrence of such a large percentage of helium in one of the gases of the Kansas field has led us to the examination of others. Up to the present time we have investigated some twenty samples from the most widely separated points of this field and have found helium in every case, but always in much smaller amounts than at Dexter. From the latter gas, we have with the aid of liquid air extracted a very fair amount of helium.

Accompanying the determination of helium, we are making complete analyses of the gases and shall have within a short time results from thirty to forty samples covering in detail the entire Kansas field as at present developed—an area of some twelve thousand square miles. The rather large number of analyses is required because the gas is extremely varied in its character. This is illustrated by the fact that the wells at Arkansas City, less than twenty miles from Dexter, yield more than 97 per cent. of combustible gases and only .16 per cent. of helium as compared with 15 per cent. and 1.84 per cent., respectively, for these constituents in the Dexter gas. Samples are also being obtained from the other fields of the country and the results from these will be included in a detailed paper to be published soon.

As the gases are run through the analyses spectral tubes are filled, and various residues and fractions are saved with the intention of subjecting them to a detailed spectroscopic examination. Some work of this kind has already been done.

We feel that we have here a very unusual opportunity for obtaining helium in practically unlimited quantities, and as we have worked out the details for its separation we shall have a large amount prepared and will attempt its liquefaction. While the necessary preparations are in progress we shall devote ourselves to the spectroscopic work above mentioned.

Hamilton P. Cady,
David F. McFarland.

The University of Kansas, Lawrence,
July 12, 1906.

CURRENT NOTES ON METEOROLOGY.

DR. HANN AND THE 'METEOROLOGISCHE ZEITSCHRIFT.'

The fortieth anniversary of Dr. Hann's assumption of the editorship of the *Meteorologische Zeitschrift* was fittingly observed by the publication of a special number of that excellent journal, to which friends and colleagues contributed articles. The 'Hann-Band' numbers 404 pages; contains 42 papers by as many different writers, and has as a frontispiece an engraved portrait of Dr. Hann. An appropriate introduction, by Pernter and Hellmann, refers to the remarkable work which Hann has done for his science in the *Zeitschrift*. Among the papers, all of which are of immediate importance, the following are of most general interest: Paul Schreiber: