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IDENTIFICATION OF A SKELETON AND TIMING OF DEATH AFTER MONTHS-- COOPERATION BETWEEN FORENSIC SCIENTIST, ODONTOLOGIST AND ENTOMOLOGISTS.

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Human bony remains are discovered in a wood on the end of April 1986.
Identification by classical features indicates the bones seem to belong to a young female around 15-20 y. of age.
More than 8 months earlier, on mid August 1985, a 17-year old girl had disappeared 50 km far away.
Dental examination of the corpse is in complete concordance with dental formula and cares of the supposed victim.
Timing of death could be achieved by discovering a particular coleopter, **Omalium rivulare**, on the bones, where it had freshly reached its adult stage. Due to cold weather over the area from mid October 1985 till end of April 1986, the development of Omalium (laying of eggs, larvae, nymphs) had necessarily taken place before mid Oct. 1985 and had begun by the first days of September 1985. As always, Omalium had followed the first squads of flies on the corpse. These came soon after girl's death and larvae's activity had prepared biologically the coming of Omalium. Due to the known durations of developmental stages of these insects, it could be deduced the girl had died at most a few days after her disappearance.
This information limited the extent of police search and some months later 2 men were arrested, who had together raped and killed the girl.

Time of death; entomology.

Poster or 35 mm projector.

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On April 29, I986, bony remains without any soft tissue are discovered in a wood of the Belgian Ardennes. Called to the site, one of us (D.P.) can see they are dispersed over an area of more than 200 sq m. They are obviously of human origin and mixed with some animal bones.

From the aspect of the pelvis (wide subpubic angle; greater sciatic notch, wide and shallow, like an isosceles triangle), a female sex is determined quickly. The sutures of the skull are all clearly visible The teeth are nearly all present with perfect dental treatments. There is no emergence of the 3rd molars, normally appearing between I5 and 2I years of age. Among the long bones, only the left femur is undamaged, with complete fusion of the epiphyses (normally taking place between I7-20 years of age). Its lenght introduced into classical regression equation of body height gives a result of +/- I60 cm (actually the height was I65 cm). From all these findings, the bones appear to belong to a young female around I5-20 years of age.

More than 8 months earlier (August I8, I985), a I7-year old girl had disppeard from a small town located 50 km far away and had probably been kidnapped.

The dental examination showed the wisdom teeth were at stage 8 of their development, which, from Nolla's tables, indicates a mean age of I7 years. Comparison of the dental formula and cares of the corpse with the files of 2 treating dentists give a perfect agreement. Moreover on X-rays of this patient, one of the dentists observed a condensing osteitis under tooth 46 (Ist right inferior molar); the same lesion was observed on a radiograph of the mandible of the death body.

The contribution of entomologists (L.M., V.C.) is particularly conclusive for determination of death time. It is based on the following facts :

I. It is known that successive kinds (squads) of insects can colonize a dead body since the time of death. This necrophagy contributes to the destruction of death bodies. The first squad is composed of flies, producing the very active and well known maggots. These contribute mostly to the elimination of the soft body parts.

2. This insect's activity is influenced by various factors among which temperature is a leading one. I ou country, flies (adult insect or larvae) are mostly hamered under I4 degrees Celsius.

3. The daily highest and lowest temperatures on the area where the body was discoveres were given by a local weather station from the day of girl's disappearance (August I8, I985) till discovery of the body (April 29, I986). The readings were plotted on a time chart which shows that from October I5, I985, until April 26, I986, maximum temperatures never climbed over I4°C and rarely over I0°C. So the transformation of the whole body into nude bones should have taken place before October I5, I985, with also the long and harsh winter : permanent frost from October 20, I985 to April 2I, I986 (I39 days) and snow from November II, I985 to March, 30, I986 (84 days).

4. On the place no insect at all of the first squad was discove= red. Among 3 spedies of adult Coleopters which were found on the remains (from Staphylinid family), only one (Omalium rivulare) is currently met on human and animal dead bodies. It follow the Ist squad of Dipters (flies). Since Omalium rivulare had freshly reached his adult stage when we observed it, its larvae should have developed on the spot after the period of the first squad, which comes on the body very shortly after death, i.e. most probably during the last fortnight of August I985.
So the develoment of Omalium rivulare (laying of eggs, larvae, nymphs) should have begun at the beginning of September I985 and have made nearly all its development by October I5, I985. At this moment, this development was slowed then stopped due to falling temperature. It resumed and finished at the end of April 22, I986, when warming up.

5. Since the Ist squad must have prepared biologically the coming of Omalium rivulare (necrophilous species) and have taken away the flesh by the end of August, girl's death should have taken place at most a few days after her disappearing.

The cause of death was unknown, 2 men were arrested some mon= ths later. One of them acknowledged kidnaping, rape and then killing the girl by shooting and stabbing. No bullet was found on the remains but a small bone chip could be seen on the right scapula, which could be the trace of a stab.

Both men were severely sentenced by Criminal Court.