The word "conformation " covers a rather complex character which is of prime importance in carcass grading and affects greatly the economic value of lambs.

It can be roughly defined as the outline or general shape of carcass, but it is clear that this definition must be completed by taking in consideration not only the proportion of meat to bone ("charnure") but also the balance of different parts within the carcass, expressed by harmony of their respective shapes.For these both aspects there is a wide variation between lambs.

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For a long time , conformation judging was only performed by eye judgment and this method is still commonly used in commercial practice .The subjective appraisal of carcass conformation suffers some criticisms because it exists possible variations both between judges and between different times of appraisal (Starke et Joubert 1961).As pointed out by Thwaltes et al.: "Such variations are inavoidable in visual appraisal because of variations in the standards of different judges and the possibility of errors of judgement being made by inexperienced persons".To minimize these variations different authors nave suggested the use of measurements, included in score cards.

Such system of scoring conformation cannot be commonly used in trade ,when it is necessary to consider in a short time a great number of carcasses .For experimental purposes one can question wether it will be really possible to obtain precise judgment of conformation by using only linear measurements.

From our experience over many months it is clear that visual appraisal may ensure a true picture of carcass conformation ,at three conditions :

I) a sufficient number of grades must exist to cover the range of conformation and to describe its various shades ;

2) the quality grades must be carefully described in the quality standards ;

3) judges may be controlled at any moment - and each time it will be necessary - by reserence to objective methods .

At the moment a new system of scoring conformation, based upon these proposals, has just been performed for the French market (ROY et al 1971).

In this system there are five general classes for conformation, from the worst to the best ( poor , middling , medium , good and Very good conformation) and three grades ( respectively low , average and high ) within each class. There exists then fifteen grades for conformation.

GRADING LAMB CARCASSES FOR CONFORMATION

P.LEGRAS (I), B.L.DUMONT (2) and G.ROY (2).

General definition of each class is given for the whole carcas<sup>5</sup> and for each of its different parts : leg , rump , loin , back and shoulder. If necessary it is thus possible to have a regional scoring. Figure 1 gives an example of the general conformation corresponding to the average grades of the five classes , named as A , B , C , D , E . In the complete proposal exist reference photographs of each of the fifteen grades , and detailed definition in anatomical terms of the various aspects of conformation in the differents parts.



Figure 1'- Conformation classes

A special attention has been put in this system upon the leg conformation which is of peculiar interest for trade. The leg conformation has been considered by two geometrical parameters, as shown in Figure 2. Leg conformation can assessed from its



general plumpness which is related to both - the "descente du gigot", expressed by ratio TH /EP and, - the "angle d'ouverture du gigot" HTP.

The posterior members being supposed maintened parallel and the carcass being examined from a dorsal view ,we call P the point of the perineal area.T corresponds a point located on the internal part of lef in its narrowest portion; EP is the horizon tal line passing through P and TH is a perpendicular line drawn from T upon EP.

Figure 2 - Geometrical parameters of leg conformation.

The corresponding values of these two parameters , according to conformation classes , are the following :

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Conformation class	Poor A	Middling B	Medium C	Good D	Very Good E
"Descente de gigot"	2	I,75	I,50	I,25	I
" Angle d'ouverture du gigot" in °	20	25	30	35	40

In the same time that this subjective system of scoring conformation has been perfected an apparatus for recording conformation, called " profilmètre" has been proposed( DUMONT et al 1970).Conformation may then be expressed,

by the ouline of the carcass at any given level ,such it is shown in Figure 3;
by the area of "flesh" comprised above any comparative basis.

The outlines of commercial carcasses of various conformation at the level of leg are given in Figure 3. They correspond to the lambs for which Taple I gives anatomical data.

Conformation grade	В	C -	C	D -	D +
length of leg F (cm)	26,5	26	24,5	23	22,5
width of leg G (cm)	20	22	21,5	22,5	23
cold carcass weight (kg)	14,57	I4,6	I4 <b>,</b> 72	I4,8	I9,35
weight of the fatty tissues in the half carcass (g)	1670	1200	1903	1868	2060
muscle/bone ratio	2,77	3,40	3,67	3,98	4,83

Table I

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The area of "flesh" above the basement line corresponding to the G measurement is in relation with the score for conformation. It is respectively of II5,1 cm<sup>2</sup> for the lamb graded B (middling average) ,127,3 cm<sup>2</sup> for the lamb graded C (medium average) and 165,7 cm<sup>2</sup> for the lamb graded D + (good high). Figure 3 - Conformation records at the level of maximum width of leg ( G measurement)



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One can see from these results that there is good agreement between subjective scoring (made by the authors) and the objective criteria of conformation which are the muscle / bone ratio and the plumpness of leg.

By using the "profilmètre" it is evidently possible to score quantitatively conformation more accurately than by using subjective grades which , comprised between two limits , show some variation in conformation. The work for the future in subjective scoring of conformation is to set the correspondence with the objective results given by the "profilmètre" . The data of Table I and Figure 3 are some of the first results obtained in this way. Then it would be possible to avoid variation in the standard of different judges by controlling objectively their appraisal on a regular manner. From our experience we would suggest that at least the five anatomical levels shown in figure 4 will be considered for judging conformation with profilmètre.

Figure 4 - Anatomical levels suggested for recording conformation with prozilmètre



avant-main

399

gigot

selle

reins

dos

6

1



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At all these levels , profiles might be measured to a constant depth from the outer surface of carcass ( 100 to 150 mm.). For the measurement the apparatus will be held perpendiculary to the backbone ,its middle reposing upon the median part of the carcass. The tive suggested levels are the following :

- I) "gigot" : upon the two eminences of semi membranosus muscles
- : at the beginning or the tail (sacro-coccygeal 2) "selle" arthrosis)
- 3) "reins" : at the junction between loin and rump (sacrolumbal arthrosis) , just in front the eminences of gluteus muscles
- : above the spinous process of the 13 th thoraci 4) " dos" vertebra
- 5) " avant-main" : above the spinous process of the 6 th thoracic vertebra (this level corresponds to the narrowest part of thorax).

In conclusion, the judgement of conformation may now be performed on rather reliable basis by using scale of judgment with fifteen degrees , in a two-steps scoring. At first one decides to which general class of conformation belongs the carcass (poor, middling, medium, good, very good). Then the carcass is definetely judged by using , if necessary , the correction offered by the sub-classes ( low (-), average (=) ' or high (+)). For calculation the following uniform numerical system is suggested :

	Low (-)	Average (=)	High (+)
A poor	A- 2	A 3	A+ 4
B middling	B 5	B 6	B+ 7
C medium	C- 8	C 9	C+ I0
D good	D- II	D I2	D+ I3
E very good	E- 14	E 15	E+ 16

On the other hand ,with the "profilmetre" it is possible to control on objective basis the repetability during time of judgement of different people D d it is possible of judgement of different people. But it is evident that this is not the only interest of the "profilmetre". This apparatus must be used to thoroughly study the various aspects of conformation to make clear the origin of variations of conformation and its consequences upon the anatomical composition and and the types of problem could be studied with the same methods in other species and for other types of meat production References.

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